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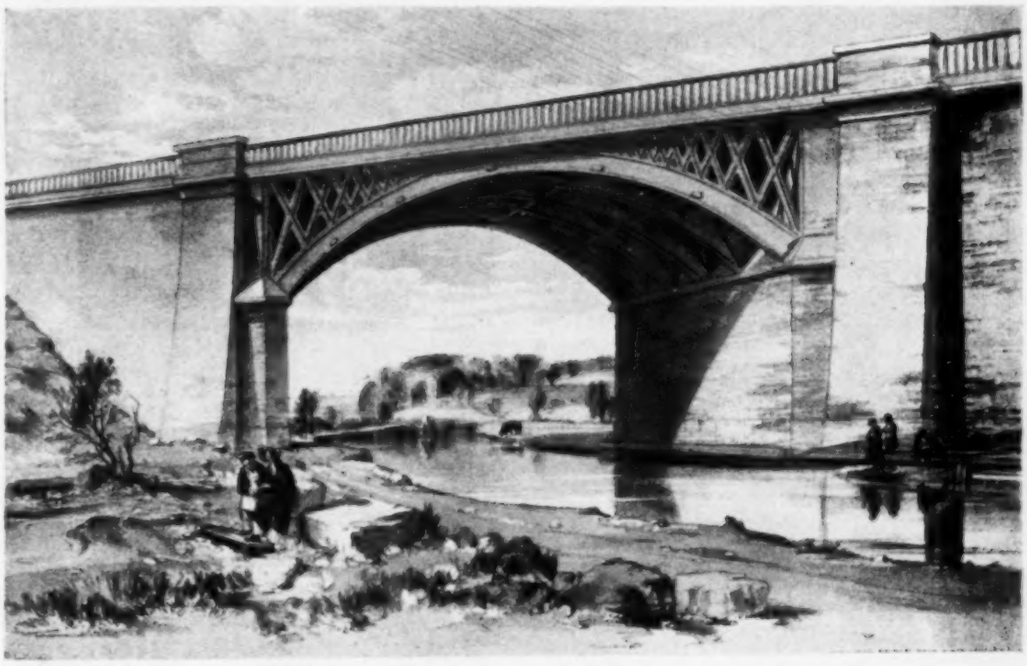


Nash Mill Bridge, near King's Langley, Herts.

From a Lithograph by J. C. Bourne.

MEETINGS

FRIDAY, *May* 2.

Institution of Mechnical Engineers. Informal Meeting. 7 p.m.

Royal Sanitary Institute. Mr. H. T. Taylor on "Can the Slum be Abolished?" At the Town Hall, Tunbridge Wells. 5.30 p.m.

National Smoke Abatement Society. Public Conference on By-laws under Section 5 of the Public Health (Smoke Abatement) Act, 1926. 71, Eccleston-square, Westminster, S.W.1. 3.30 p.m.

Institution of Municipal and County Engineers. Meeting of the West Midland District. At Kidderminster. 2.30 p.m.

MONDAY, *May* 5.

Society of Engineers. Mr. H. R. Lintern on "The Methods of Testing the Lubricating Values of Oils, Greases, etc." 6 p.m.

Institution of Civil Engineers of Ireland. Ordinary Meeting. At 35, Dawson-street, Dublin. 8 p.m.

TUESDAY, *May* 6.

Illuminating Engineering Society. Mr. T. Austin on "Luminous Traffic Signals." 7 p.m.

WEDNESDAY, *May* 7.

Royal Society of Arts. Sir Fabian Ware on "National Parks." 8 p.m.

THURSDAY, *May* 8.

Institution of Structural Engineers. Annual General Meeting. 6.30 p.m.

FRIDAY, *May* 9.

Royal Institution of Great Britain. Professor J. Garstang on "Archæology and Bible History." 8 p.m.

WEDNESDAY, *May* 14.

London Society. Annual Dinner. At the Hotel Victoria, W.C.2. 7.45 p.m.

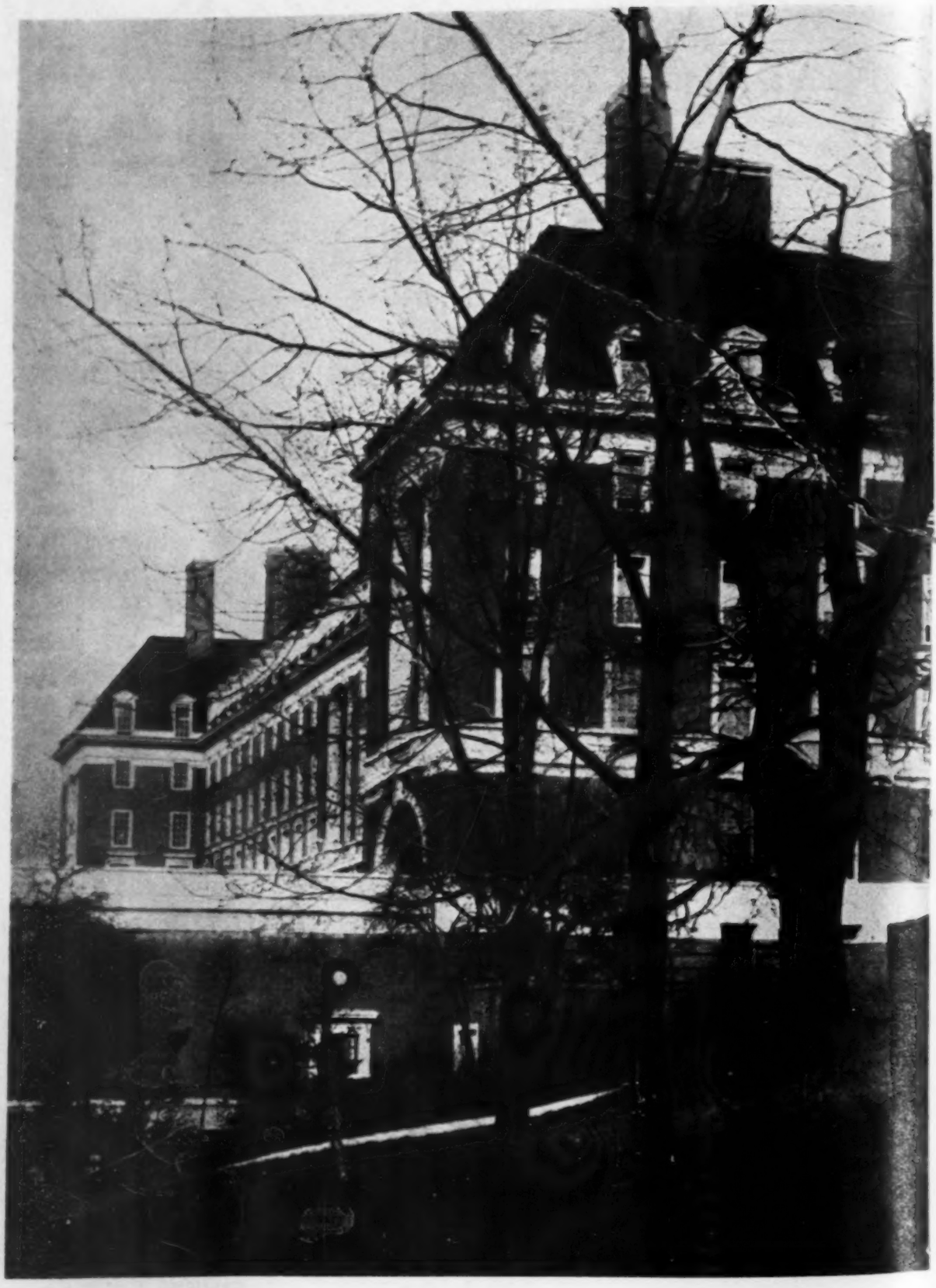
THURSDAY, *May* 15.

Royal Institute of British Architects. Annual Dinner. At the Guildhall, E.C.2. 7.15 p.m.

Institution of Electrical Engineers. Annual General Meeting. 6 p.m.

FRIDAY AND SATURDAY, *May* 16 *and* 17.

Institution of Electrical Engineers (Scottish Centre). Meeting and Excursion at Dundee.



The Star and Garter Hostel, Richmond, Surrey.

SIR EDWIN COOPER, A.R.A., Architect.

ARCHITECTURE AND THE STATE.

THE relation between the State and the architect is a matter of such moment that we make no apology for once more returning to the subject. It is no exaggeration to say that the future of architecture is in the balance, as there can be little doubt that, if the planning of all important public buildings becomes the monopoly of a State Department, the art of architecture is likely to decline for lack of the two essentials which maintain it as a living art: competition, and the exchange of ideas between the architect and his clients.

It is curious to note that in France, where a Ministry of Fine Arts exists, there seems to be a more logical way of dealing with this question of the planning of State buildings of importance. In our own country, although we have a Rome scholarship, it leads nowhere—in subsequent official recognition: it is left to private citizens or our great banks to give encouragement to the winner of the Rome Prize. It would be interesting to learn by what process of reasoning the official mind reconciles the apparently illogical position of supporting this scholarship without making use of the talent and ability of the successful candidates at a subsequent period.

Then, too, it cannot reasonably be contended that the best results are automatically secured by all Government commissions being carried out by the Office of Works; they may be the finest examples of architectural talent which can be found, but it is likewise quite possible that this is not the case. The question could be easily put to proof by means of an open competition in which official architects competed on equal terms with architects in private practice. There seems no obvious or easily apprehended reason why such a simple solution of the problem should not be quite agreeable to the official mind, if the statements which have recently appeared in the Press are accurate.

In the existing circumstances, we are not surprised to learn that the public are somewhat bewildered and that many of their elected representatives in the House of Commons are dubious about the megalomanic tendency which has recently marked the official actions of the Office of Works. To urge that State buildings should be entrusted to official architects because the fees which would be payable to a private architect are saved is an argument which may, or may not, be accurate; it would probably be quite impossible accurately to ascertain the real proportion of the annual estimates of the Office of Works which should be charged up to any particular building.

There is, however, another aspect of the matter which is not without interest as it throws light on the difference between the official and the private architect.

In the modern world—more especially in civic and commercial architecture—the private architect is in a very similar position to the inventor, that is to say, he truly earns his fee (and usually saves his clients a very much larger sum) by the solution of a particular problem in planning. He may, quite accurately, be considered as the inventor of the plan which he evolves, and he is employed and remunerated because of this special ability, in very much the same way as is the inventor—that is to say, each problem with which he is concerned requires a fresh invention or plan to meet the special conditions of site or use.

This special aspect of civic and commercial architecture is now much more definitely marked than in pre-War days, for two reasons: firstly, the paramount need for an economical solution to every problem, and, secondly, the wide range of possibilities in new methods of construction which are now available. There might, perhaps, have been some justification for the argument that the private architect was more concerned with the elevations than interested in the planning of public buildings in pre-War days; now it is out of date. The mere fact that this ancient plea is put forward is significant, because it indicates that the official mind is still inclined to attach importance to such things and shares the popular delusion that artistic expression and a practical mind are incompatible.

Here we may perhaps digress for a moment to quote the opinions of a writer who deplores the lack of effective and persistent propaganda, on behalf of the architect, and we share the distaste which is felt by most artists—and the architect among them—for advertisement, but it is well to know the views of our correspondent. "What," he says, "would be undesirable if undertaken by individual members of the profession could be undertaken by such a body as the Royal Institute of British Architects. What is required is not sporadic and intermittent moments of activity, but a continuous and properly organised campaign directed by a specialist in the art of publicity."

In addition to this response to a growing demand for information about architecture, there are other useful agencies for the gradual education of public taste, such as the advisory panels recently set up by the R.I.B.A., and the C.P.R.E., where architects themselves can influence public opinion if they will. It is illogical to lament a lack of taste and not to essay all possible means to remedy this defect. And as, in other directions, the advantages of collective effort have been amply demonstrated, the case for applying this method to the problems of propaganda is a strong one. The field is wide, and there is ample scope for many workers, but there should be co-ordination and a plan of campaign.

In considering the matter we are faced at the outset by a big question: Do architects know what they want? Much of the confusion existing in the public mind is due to the fact that a larger amount of publicity in which architects and architectural societies are concerned deals with the preservation of existing buildings, and insufficient thought is given to the effect of this on the public mind.

Meanwhile, new buildings go up in our cities and towns, and only a few—even of the architects themselves—know who has planned them.

So we come back to our subject to find that it is closely allied with the question of publicity. Propaganda must be fought with publicity: it cannot be defeated by silence, or by the gallant efforts of a few enlightened individuals. Architects must more frequently speak with one voice, and they will then find that the Press and public will listen to them. Perhaps we may then see an enlightened country so interested in architecture that few persons of taste or refinement would consider their education complete without a knowledge of the history of the art of architecture, and a sufficient apprehension of its principles to enable them to judge between what was good, and what was bad, both in public and private edifices. And thus the whole question which now so concerns us would be settled by public opinion, which is probably the only way in which it can be settled. We therefore suggest that architects should see to it that the public is properly informed on their work, ideas and ideals as soon as may be.

NOTES

The R.A. Exhibition.

A BRIGHT and fairly attractive effect has been obtained in the architectural gallery this year by a varied mixture of colour and black and white. There are no drawings of outstanding importance unless we except the fine line elevation and section of the Liverpool Cathedral, and these with other subjects give rather more than usual value to the examples of ecclesiastical work. Domestic work, of which there is much that is admirable now going on, is unfairly represented, for we know of some conspicuously notable rejections. Public work is shown by some admirable contributions, and some of the more eccentric examples of commercial work are in evidence. We wish we could see more definite signs of a real attempt to discourage the exhibition of work which is unworthy of the architectural profession. Sir J. Burnet, Sir E. L. Lutyens, Mr. E. S. Prior and Sir Aston Webb do not exhibit this year.

The Models.

THERE are amongst the exhibits a considerable number of works which uphold the credit of the profession and provide evidence that the art is in a healthy state, notwithstanding the prevalence of modern eccentricities. The three exceptionally good models add largely to the interest of the gallery. Mr. Vincent Harris sends a large model of the Manchester Reference Library which occupies a dominant position and provides a realization of something of the effect of the completed work. The model of Earl Haig Homes, Liverpool, by Messrs. Grey Wornum & Harris & Hobson, is one of the best which has ever been shown at the Academy, for the design is most pleasing in its general character and proportion and the colour and texture of the model very satisfactory.

Sir Edwin Cooper, A.R.A.

THE election of Sir Edwin Cooper as an Associate of the Royal Academy by the largest vote, we understand, ever accorded to an Associate, is some indication that the members realised at last that the exclusion from a body representing the arts was not only an injustice to one of the most accomplished architects of our time, but a reflection on the Academy itself. Sir Edwin, by his many great and scholarly works, has done as much as any living architect to uphold the traditions and advance the interests of the art of architecture, and therefore the profession to which he belongs; and the honour which has been conferred upon him by an exceptional vote, belated though it is, must be regarded as a just tribute to the distinctive work of a great architect. In heartily congratulating Sir Edwin on this honour, we know we express the satisfaction of his brother architects who, whatever their differences of opinion of an artist's work may be, are always ready to pay honour where honour is due, and their appreciation of the distinction conferred on a distinguished confrere was shown in an unusually enthusiastic manner at the meeting of the Institute on Monday. We give below a note of what was said at the meeting, and on p. 849 some brief particulars of Sir Edwin's career.

The Institute's Congratulations.

BEFORE the reading of the paper Sir Banister Fletcher said he would like to refer to the fact that one of their most distinguished members had been elected an Associate of the Royal Academy. He congratulated Sir Edwin Cooper on his election to a position that was fully deserved. He proposed that the hearty congratulations of the meeting be conveyed to Sir Edwin on the honour that had been conferred upon him. Mr. Arthur Keen, seconding the motion, said it was a strange thing that Sir Edwin had not been elected to the Academy long ago, but they were all delighted that he had now achieved the honour, and hoped that the next would follow before long. The motion was then put to the meeting and carried with acclamation.

An Architect Laureate.

WHAT precisely useful purpose would be served by the revival of some such title as that held by Inigo Jones and Christopher Wren it would, perhaps, be difficult to say, but at all events there would be some analogy between it and the office of Poet Laureate, and the production of ideality and poetry in building might, perhaps, be considered as praiseworthy and valuable as the production of a lyric or poem. The suggestion by Major Athoe that some title of honour might well be bestowed on a prominent member of the profession means that another of the arts might have a titular head as an acknowledgment of its status and importance. The air is laden with honours to-day, but the honour we accord to an art is not, perhaps, altogether thrown away.

Building and Craftsmanship.

COMMENTING on our leading article in last week's issue, a correspondent writes:—"So much time has been wasted in talking about ideals of craftsmanship and the need for good work, that the practice of fine craftsmanship, more to be depended on than 'ideals,' has been left in the background. The studio and workshop, with their personal contribution, are replaced by the adaptable sort of craftsmanship which we see now harnessed to mass architecture to interpret its stereotyped alternatives to the real thing. It has been urged, not without

Great Ventilating Shaft, Kilsby Tunnel.

From a Lithograph by J. C. BOURNE.

authority, that the possible amelioration of these evils may grow out of the practice of the sixteenth and seventeenth centuries, when a new direction was given to architecture by the more immediate control of the artist and craftsman. St. Peter's at Rome and the Palace of Fontainebleau are examples of this more sensitive co-operation, and no doubt the history of the Gothic period at its best represents the same thing. With architecture to-day in process of being captured by a Department of State on one side, and commercial control on the other, fresh life to architecture may well be given when the artist is freer to exercise his genius more directly on building. So out of present evils good may yet come, and a more real collaboration exist between building and craftsmanship as both are better directed. The interests of architecture are not only concerned with accepting our time but in leading it, and leadership comes through leading. For this neither time nor circumstances should control us, but the truth and reality on which it all depends."

The Newcastle-on-Tyne Society.

Some useful activity is disclosed in the annual report of the Newcastle-on-Tyne Society for 1929. It is well to see that the Lord Mayor is president, and we may be sure there will be a sympathetic link between the city and the Society. In Birmingham we have an example of the valuable and cordial relations which exist between a city and a Society which exists as an honorary helper and adviser in all those matters of general amenity which have now become so much a matter of vital necessity to that city. In Newcastle-on-Tyne a subject of especial importance just now is the scheme for new municipal buildings, and much divergence of opinion has arisen over the question of the proposed site. Apparently the Society has not been able to agree with the Council as to the choice of site, viz., in the Exhibition Park. The green belt scheme, smoke abatement, ancient monuments and the town walls, the question of trees and gardens, etc., are amongst the matters which give the Society concern besides the menace to the Roman wall. The members of this Society include a good many able and distinguished people.

Land Valuation.

The present Chancellor of the Exchequer will have to display greater resource than he has done in his Budget if he intends to revive the disastrous experiment of 1910 and make a success of land valuation and the taxation of site values. It is not clear from his statement in the House with what object he intends to introduce this form of taxation, that is to say, whether as a form of relief from other taxes, or as an addition for social services. He is reported as having said: "I have never regarded the taxation or rating of land values only as a fiscal instrument. It will be, to use a phrase of Mr. Asquith's, a potent instrument of social reform." The land valuation was the first cause of house shortage, although this was accentuated by the outbreak of war, and it would seem curious that a Government which undoubtedly has housing at heart should revert to this form of taxation, were it not remembered that they take little account of that private enterprise which really saved the situation after the war and concentrate upon the local authorities. The subsidised local authorities would have little to fear from this, coupled with their powers to acquire land compulsorily, but there is every reason to think that private enterprise would be affected as seriously as it was in the four years following 1910, and before the outbreak of war. Thus the present position is more serious than it was in 1910 to private builders as they will be in a sense a limited class affected by a form of taxation which others will escape, and opposition may thus be weakened.

Revenue and Expenditure.

In times like the present when industries are suffering from depression and unemployment is rife it is in itself unfortunate that any element of uncertainty should be introduced affecting such an important raw material as the land. The nebulous theory of increment value attaches to the proposals to tax site values, and all the old arguments used in 1910 against them will have to be repeated although their soundness was proved by that most convincing form of proof—practice. The golden prospects held forth by the author of the scheme can be compared with a statement made by the then Chancellor of the Exchequer to the House of Commons in April, 1919, some eight years after the Act had been in operation, which we published in our issue April 11, 1919, that the amount of the revenue from the land value duties up to March 31, 1919, was £4,113,906, and that the total expenditure incurred in connection with the work of the Valuation Office and with the collection of duties on land values up to the same date was £4,600,000. This loss of £486,094 to the Exchequer took no account of the expense the public were put to, which must have been very considerable.

The Purity of Rivers.

The Pure Rivers Society is concerned by the employment of tar on our roads as being inimical to the fish in our rivers, and an appeal is made to use bitumen or some form of tar which may avoid the danger to our fishing activities. There seems no doubt that this danger is a real one, and it is to be hoped some intervention may succeed in avoiding or minimising it.

Working Shaft, Kilsby Tunnel, 1837.

From a Lithograph by J. C. Bourne.

GENERAL NEWS

Professional Announcements.

Mr. T. Alwyn Lloyd, F.R.I.B.A., of Cardiff and 3, Lincoln's Inn Fields, W.C.2, has been appointed by the Dunstable Corporation for their housing schemes, being selected from the 72 architects who answered the Corporation's advertisement in *The Builder*. The Corporation intend to commence with the erection of the first 100 houses in the near future.

Modern Belgian Art at Brighton.

The Exhibition of Modern Belgian Art opened, on Wednesday, in the galleries of Brighton Museum. The exhibition is under the patronage of the Belgian Minister of Sciences and Arts, and the collection includes works by the best of the oil and water-colour painters, the sculptors, and the engravers of present-day Belgium. The finest examples of Belgian book production, as well as reproductions of manuscripts with miniatures, have been brought together for this exhibition.

Tithe Barn at Naseby.

The tithe barn at Naseby, built in 1651, the only one of its kind now remaining in Northamptonshire, is now in such a bad condition that a considerable sum would be required to carry out a complete restoration; but the Architectural and Archæological Society for the Archdeaconries of Northampton and Oakham state, in an appeal, that if sufficient funds could be raised to thatch the barn and repair defects in the sides, it could be made secure for many years. Communications should be addressed to Major C. A. Markham, Flore, Northampton.

The Saxon Cloister at Glastonbury Abbey.

We learn that the excavations undertaken jointly by the Society of Antiquaries and the Somerset Archæological Society at Glastonbury Abbey will be resumed early in May. Last year the work undertaken enabled the foundations of the Saxon Church built by King Ina, and the extensions made to it by St. Dunstan, to be traced to a large extent. This season it is hoped to explore the ground in which the remains of the Saxon Cloister are likely to be found, if any exist. When this area has been excavated the work of tracing the Norman Church will be started.

Hengistbury Head.

A strong effort is being made by Bournemouth Corporation to save Hengistbury Head, a historic beauty spot near the town, which is being offered for sale by the owner, Mr. Gordon Selfridge, from being developed as a bungalow town. It is learnt that it was decided at a recent private meeting of the Council to interview Sir Howard Frank, Mr. Selfridge's agent, and to get in touch with Christchurch Corporation with a view to joint action. It is understood that Mr. Selfridge is willing to negotiate with a public body.

Hadrian's Wall.

It is learnt that Mr. Lansbury, the First Commissioner of Works, spent some time on April 22 along the line of Hadrian's Wall. He has divided his time almost equally between Mr. Parker Brewis, the spokesman of the opponents on æsthetic and historic grounds of the quarrying scheme which threatens a portion of the wall, and Mr. J. F. Wake, the promoter of the scheme, who was accompanied by his solicitor, Mr. J. R. Hall. On leaving Newcastle on his return to London, he stated that he felt confident that in the end some sort of conclusion would be arrived at that would be satisfactory to all those who wanted to preserve the wall and also the surrounding countryside.

Society of Antiquaries.

At the anniversary meeting of the Society of Antiquaries on Monday, April 28, the customary elections of officers and council for the ensuing year were held, and resulted as follows:—President, Mr. C. R. Peers, C.B.E., M.A.; treasurer, Mr. William Minet, M.A.; director, Mr. Reginald A. Smith, B.A.; secretary, Mr. A. W. Clapham.

Members of Council:—R. C. Bosanquet, Harold Brakspear, J. P. Bushe-Fox, Very Rev. Dean of Norwich, C. T. Flower, Dr. Cyril Fox, J. A. Gotch, Dr. H. R. Hall, Very Rev. Dom Ethelbert Horne, E. Thurlow Leeds, Prof. E. H. Minns, W. H. Quarrell, Harold Sands, E. Reginald Taylor, Sir William Wells, Francis Weston, Ernest Woolley.

Proposed Mayfair New Streets.

The Westminster City Council, at a recent meeting, adopted a recommendation from its Improvements Committee that Mr. W. R. Davidge, F.R.I.B.A., P.P.T.P.I., be asked to prepare a report and plan of desirable improvements in the area bounded by Park-lane, Regent-street, Oxford-street, and Piccadilly. Two proposals to ease the pressure on Bond-street are: a new street on the western side of Bond-street, forming a continuation of Dover-street and joining up with Woodstock-street; and a new street on the eastern side of Bond-street, by cutting through from Savile-row to Conduit-street, and widening the narrow stretch of Vigo-street between Savile-row and Sackville-street.

OBITUARY

Henry James Johnson.

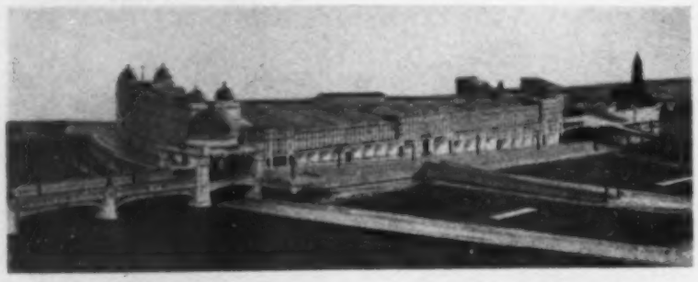
We regret to announce the death of Mr. Henry James Johnson, F.S.I., which took place on April 25. His connection with the quantity surveying profession started more than 50 years ago. In 1906 he became a partner in the firm of George Corderoy and Co., practising at 21, Queen Anne's-gate, and at the time of his death was senior partner.

Ben Kirk.

We regret to record the death of Mr. Ben Kirk, senior director of Messrs. Kirk & Kirk, Ltd., on April 30, aged 85. He was the builder of the original Brighton Aquarium, Scarborough Aquarium, Daly's Theatre, Duke of York's Theatre, Oxford Theatre, and Holborn Empire. He had not taken any active part in the business for some years.

David Muirhead, A.R.A.

It is with regret that we record the death of Mr. David Muirhead, A.R.A. Born at Edinburgh in 1867, he received his earliest training there, afterwards attending the Westminster School of Art under Professor Frederick Brown. Of later years Muirhead was predominantly a landscape painter, in oil and water-colour, but he produced from time to time a number of portraits and figure subjects—mostly in low-toned interiors with the circumstantial interest of period costume and surroundings. He is represented at the Tate Gallery by three oil paintings—including "Portrait of a Girl"—and one water-colour, and examples of his work are to be found in most of the provincial public galleries of England, and in Paris, Dublin and Ottawa.



Charing Cross Bridge: A Suggested Treatment of the Railway Terminus.

By Mr. John Murray, F.R.I.B.A.

COMPETITIONS OPEN.

	Particulars published in "Builder."	Sending in-date.
Design Competition in two classes (over and under 25 years of age), for aeroplane hangar. A.A.S.T.A., in conjunction with Messrs. Ewart & Son, Ltd. Messrs. W. H. Hamlyn, A.R.I.B.A., C. McLauchlan, A.R.I.B.A., and A. N. Cathcart, assessors. Conditions from Secretary, A.A.S.T.A., 26, Buckingham Gate, S.W.	April 4	May 16
R.S.A. Competitions for industrial designs. £1,900 in scholarships and prizes. Full particulars from Secretary, Royal Society of Arts, John-street, W.C.2 ...	Jan. 31	May 26
New Public Library and Museum, for Chelmsford T.C. Mr. H. V. Lanchester, F.R.I.B.A., assessor. Conditions from G. E. Barford, Town Clerk, Clerk's Office. Dep. £1 1s.	Feb. 21	June 14
Public Baths, for Corporation of Kingston-upon-Thames. Premiums of £300, £200, £100 and £50. Mr. J. Ernest Franck, F.R.I.B.A., assessor. Conditions from Mr. A. W. Forsdike, Town Clerk's Office, Kingston-upon-Thames. Dep. £1 1s.	Mar. 14	June 14
New Masonic Hall, Enniskillen, for Enniskillen Masonic Body. Open to architects practising in Ireland only. Premium, £50. Mr. John Seeds, F.R.I.B.A., assessor. Conditions from Mr. R. W. Smith, Hon. Sec., Building Committee, Masonic Hall. Dep. £1 1s.	April 4	—
Municipal Buildings in Chapel-road, for the Worthing T.C. Premiums of £350, £250, £150 and £50. Mr. H. V. Ashley, F.R.I.B.A., assessor. Conditions from Mr. J. Kennedy Allerton, Town Clerk. Dep. £1 1s.	April 4	July 5
New Town Hall and Municipal Buildings, for the Luton T.C. Premiums of £500, £300, £200 and £100. Sir Brumwell Thomas, F.R.I.B.A., assessor. Conditions from Mr. W. Smith, Town Clerk, 2, Upper George-street. Dep. £2 2s.	Mar. 14	July 31
Two Council schools at Dudley, for Local Education Authority. (1) At Priory Estate, for 400 children; (2) at Brewery Fields Estate, for 320. Open to architects with offices within 15 miles' radius of Dudley. For each: Mr. H. T. Buckland, F.R.I.B.A., assessor, and £150, £100 and £50 premiums. Conditions from Mr. J. Whalley, Education Offices Dep. £1 each	April 25	July 31

CORRESPONDENCE

Government Officials and Private Practice.

SIR,—Since the War you have occasionally been good enough to publish letters by me, but I have no knowledge of the letter which Mr. A. Seymour Reeves accuses me of having written, and which he states appeared in your issue of April 18. In his letter, which appears in your issue of April 25, he seems to be profoundly impressed with the things I am not aware of. I may be wrong, but I think he is probably replying to a most excellent and logical letter from the brilliant pen of "J. D.," who will no doubt answer Mr. Reeves's letter as it should be answered. Allow me briefly to support "J. D." as he has so ably supported me.

I was not aware that Mr. Reeves was a practising architect. Obviously, from his views on this question he has not had his practice interfered with by officials as many in the North have had. It is not a question of law at all, but decent Christian treatment between man and man. I am perfectly aware that many private practitioners receive part-time salaries (or retaining fees), but these do not come out of the ratepayers' pockets. I know nothing about the pay of the average civil, municipal, or county official, except those of the heads of departments. If they are underpaid they can either combine for a rise or get out.

If I employ a man to work for me from 10 to 4 or 9 to 5, I do not expect him to be found visiting private jobs, loafing in coffee-rooms at 11 a.m., attending furniture or picture sales, private views of picture shows, acting as secretary to learned societies, and attending meetings during these hours.

I have not studied this question for 25 years without knowing what I am talking about, although I have never gone one step out of my way to collect evidence; I have been much too fully occupied with my own affairs, and this makes my evidence the more remarkable, as it has come to me in my daily round in a most astonishing way. What I know, therefore, must be a mere fraction of the truth.

For any practising architect to support the present system in this matter only shows that he knows nothing about the true state of affairs or that he defends it for some personal and unknown motive. "J. D.'s" letter should be strongly supported by all who know the real facts.

WILLIAM DAVIDSON.

SIR,—I have read Mr. Reeves's letter in your issue of April 25, and believe that some of his statements refer to points raised in my letter of April 18, the concluding paragraph of which indicates my view regarding the main points of contention. I also mentioned a few *indisputable facts*, and regret that Mr. Reeves did not attempt to deal with these instead of talking so much about his constructive policy, which is not at all clear. If the committee to which Mr. Reeves refers were composed of salaried men and their employers there might be more difficulty in agreeing upon questions of pay.

It is surprising that architects who consider the profession a back number should continue in private practice. Retaining fees for part-time duties have no bearing on this issue. Mr. Reeves states that "a private practitioner must give equal attention to his different employers," and if he carefully considers this statement he may discover very damaging evidence against his case. It is difficult to say what legislation is concerned with at the moment, but at least some effort is made to protect public interests, and I hope that this duty will not be entrusted to an Institute which claims to represent the noble profession, and at the same time admits that it is a job which can be carried on as a side-show after business hours. I cannot imagine anything more likely to damage the interests of the profession.

Attempts to cover up these irregularities have been pitiful. The officials have not ventured to issue any statement in support of the practice since their first attempt to cloak the real issue. Questions now raised in official quarters are met with the reply: "This work is allowed in accordance with Civil Service regulations," and even this is irregular. These regulations were framed in a panic to whitewash the conduct of certain officials. Questions of this kind do not affect other branches of the Civil Service, and conditions applying only to the conduct of a comparatively small number of men cannot properly be described as Civil Service regulations. There has not been any defence of the practice which satisfied even the man in the street. On the other hand, it would require considerable space to record all that has been said against the arrangement—including leading articles in the public Press. Architectural societies have done nothing to assist in restoring public confidence in the profession.

I thank Mr. Davidson for his kind reference to my letter. What is required is a practical service to look after the business interests of the profession, and this, I suggest, can only be done by a society favouring private enterprise—totally excluding public officials. In this matter the position of existing societies is really grotesque. Surely one of these societies can evolve a consistent policy, and act in matters of public interest like other professional organisations. In the meantime I am not concerned about constructive policies of this kind. I am supporting those who are trying to bring about the suppression of a practice that is a disgrace to the profession, and I trust that readers of *The Builder* will appreciate this policy.

J. D.

[The letter published in our issue of April 18 was by "J. D.," whose letter we publish above, and Mr. Reeves, in attributing it to Mr. Davidson, was in error.—ED.]

"The Italian Exhibition: A Retrospect."

SIR,—I read with much pleasure and many an inward chuckle the article in last week's *Builder* on this subject. One side of it, however, I should like to discuss somewhat further. It seems to me that in discounting the analysis of art on the ground that art is a mystery, the writer encourages rather than resists the professionalism and charlatanry which he perceives and very rightly condemns.

He asks in effect: What is art? The question which the artist should ask is not this, but how (by what means) is art? And this question he may ask with every confident belief that when he reaches a particularised experience of how he tries to do whatever he is trying to do, then his chances of success will inevitably be better than before.

The question: How is art? at once leads to a study of the science of effect. How is effect? Personal introspection has convinced me that individual anticipation is the subjective substance at the root of all effects. It should be realised that anticipation can be relatively inattentive as well as attentive. Effects may be as we individually anticipate or do not anticipate them. An extreme effect contrary to anticipation we call a surprise. An effect which can be precisely anticipated we call rhythmic. Between these two extremes the artist finds his effective field. Thus, very briefly and generally, the question "How is art?" not only does not separate art from life, but, on the contrary, is capable of an answer which shows art to be something essentially vital.

M. M.

Charing Cross Bridge and Approaches.

SIR,—May I be allowed to submit that it is quite possible to construct the new railway station and hotel on the official site already proposed without unduly marring the amenities or future development of the south side of the river. It all depends upon the design of the station and hotel, the lay-out of the approaches and embankment and the uses of the station.

I have prepared a scheme and a model showing how a good solution can be accomplished, and I beg to transmit to you three photographs—[one only is reproduced.—ED.]—showing my completed model of the station enclosed by the new hotel facing the river and two blocks of shops and flats, one along a sloping approach road to the new bridge and one along the sloping and widened Waterloo-road. These shops and flats can be satisfactorily constructed so as to screen effectually and yet not injure the station, and they would provide a large additional revenue to the railway company.

The official proposed twisted high-level approach road in Lambeth with its viaducts and tunnels is quite unnecessary. I submit that a much better approach adjoining the new station can be made by a simple sloping road similar to Waterloo-road with a gradient of 1 in 30, as shown on my plan and completed model. This road also affords a direct and essential outlet for vehicular traffic from Waterloo Station to the new bridge, which the official plan does not provide.

I suggest that the new station, which will ultimately only be used for electric trains for passenger traffic, should not be used at all for much, if any, goods traffic. I submit that most of the goods could be deposited at Nine Elms or other stations, and conveyed to Covent Garden and all other destinations by motor lorries at night. The widening of Waterloo-road and London-road that I suggest up to the Elephant and Castle would provide fully for this traffic as well as the increasing future South London traffic.

What logical reason is there for not making the bridge and approach roads between the buildings 120 ft. wide for 8 lines of traffic? The existing railway bridge, including its footbridge, is about 110 ft. wide; part of Regent-street is 89 ft., Portland-place 116 ft., Mile End-road 150 ft.

Unique and important covered stations for tramcars and motor-buses can be provided at the Embankment level at the two bridge heads under the approach roads to Charing Cross and Waterloo Bridges. The cars and buses could run via a one-way route from Waterloo Station along and under the new approach road northward, along the Embankment eastward and under and along Waterloo-road southward. Escalators and staircases would convey the public up to and down from the heads of the new bridge and Waterloo Bridge. Thus a great and attractive circular tramcar and motor-bus route for South London could be formed and carried right up to the new Embankment.

In this scheme the only tunnels would be under a top-lighted railway bridge about 24 ft. high across Waterloo-road and York-road in the position of the existing old railway bridge and the tunnels with proper modern lighting would not be really objectionable. This tunnel across Waterloo-road can only be omitted by sinking the station down to a low level, approaching it by sloping roads under the blocks of shops and flats, and lowering the whole existing railway track for a long distance. Although this is possible, the cost of it, including compensation for loss of railway income during the reconstruction appears to render such a scheme prohibitive.

The completed model of my design for the whole lay-out will be exhibited at No. 2 Cockspur-street, S.W.1, until May 17.

JOHN MURRAY.

Lavenham, Suffolk.

Mr. A. R. Powys writes to point out that the reference in his letter on this subject, given in our last issue, should have been to the Guild Hall—not the Wool Hall—this latter building having been beautifully repaired.

ARCHITECTS' DRAWINGS, 1800-1851.

Sir Banister Fletcher, President, occupied the chair at the R.I.B.A. on Monday night, when Professor A. E. Richardson read a paper on this subject.

Regarded broadly, said the speaker, the period was not in itself propitious for art; the artists themselves complained of the chaos and Babylonian confusion. Democracy was already powerful, the old traditions formed so many obstacles, the forces of industry aimed a deadly blow at cultural leisure. We had to turn to the second half of the eighteenth century, the period so engaging and so diabolically clever, in order to apprehend the meaning of architectural draughtsmanship during the first half of the nineteenth century. At this period the population was comparatively small, industry just balanced agriculture, the middling classes were imitating their betters. It was a time receptive of classicalities from France, Italy and Greece. We viewed this period from a comfortable, if besotted, vantage point. The scenes passed before us as in a carefully timed gallantry show. In the cities, towns and villages the mediaeval skeleton could be seen beneath the diaphanous Latin cloak. We recalled old London, the tortuous streets, the curious signs, the bow-fronted shops, the busy transport centres of Southwark and Smithfield. There was the theatre in Drury-lane, the new clubs of St. James's, the sedan chairs, post-chaises and heavy wagons. There were the watchmen with their rattles and lanthorns, the red-waistcoated Bow-street runners, the hangings at Newgate and Tyburn, the flagellations in and out of Bridewell. Beyond London stretched the roads, the age-old veins along which circulated some small part of the life-blood of the nation. Hogarth and Rowlandson had left precise information on these matters. When we delved into the most fascinating literature that had ever been written, we awakened to the posturing and the brutality. But the art of architecture flourished. The connoisseur criticised the growing streets; the draughtsmen found scope to illustrate the scenery of London and Westminster. George Morland painted the unspoiled countryside and Joseph Farrington explored the scenery of mountains, towns and rivers. Thanks to the presence of so many engravers of French extraction, the art of the limner was regarded as the province of the foreigner. It was thought that style in art was best when imported. The picture gallery for the man in the street was the print shop.

In the meantime a new coterie of nature artists was being recognised and it was not long before the print sellers, Sayer, Bowles and Carrington, and Alderman Boydell added views of buildings to their ordinary stock. Another factor was the growing custom of bringing back perspective views of foreign buildings. Earlier in the century the Society of Dilletanti had advocated foreign travel. For a long time both patrons and architects had been in touch with foreign schools and artists. As a result architectural draughtsmanship began to improve. The classical bias was well catered for. On the Gothic side the woodcuts in the *Gentlemen's Magazine* led eventually to the revived taste for mediaeval work. When George the Third came to the throne a very considerable body of engravers and topographical draughtsmen were in existence. Some of these men had visited Italy, others France. They had seen the perspective drawings of Bibiena and Pannini, some were familiar with the illustrations of old Rome and the outpourings of Piranesi. The principal inspiration, however, came from France, particularly from draughtsmen with the ability of Louis and Clerisseau. It was clear that events were shaping towards definite leadership. The desire for analytic training eventually led to the document known as the "Instrument," and the founding of the Royal Academy. Henceforth the old vitality of English limning was to be strengthened. There was to be more geometry and greater accuracy in presentation.

Among the architects Sir William Chambers studied under Clerisseau and the Brothers Adam had recourse to the drawings of Andreas Coner and Antonio Zucchi. With the founding of the Academy schools and the appointment of accredited professors, students were in time sent to Rome. Meanwhile Stuart and Revett astonished the architects by publishing their researches at Athens. Some of the earliest essays in water-colour were in preparation at the hands of the skilful Paul Sandby, and Canaletto found in the spires and the river of London inspiration equal to Venice. Another important factor which must not be overlooked was the elder Malton's treatise on perspective which appeared in 1774. Draughtsmen were now drawing with accuracy; they employed delicate lines and heightened their work with bistre washes. The majority of architects, it should be noticed, were content to draw in elevation. Thomas Sandby was an exception; he it was who indulged his fancy for perspective views of interiors.

The chief architectural draughtsmen of the third quarter of the eighteenth century was Thomas Malton, whose first employment was to illustrate the chief buildings designed by Sir Robert Taylor. In his own collection, said the speaker, there was a small pencil study by this draughtsman for the principal apartment at Heveningham. This drawing was interesting as a basis for the aquatint copies which ensued. The next departure came when Thomas, son of the elder Malton, published his pictorial views of London and Westminster, a work generously subscribed by the public and followed later by views of Dublin. For these reasons the period 1790-1800 could be regarded as the beginning of the fashion for architectural perspectives which has been continued to the present day. Among the later architects of the eighteenth century Soane was the first to realise the advantage of perspectives to illustrate his own work. He it was who had been advised by Sir William Chambers to study Piranesi, and he never forgot the advice. The collection of perspectives at his Museum in Lincoln's Inn-fields was instructive.

The eighteenth century was about to end, but it was to shed its lustre upon the first quarter of the epoch to come. Two drawings in the exhibition were representative, said the speaker, of the facility of architects of the time for perspective. Both these drawings showed Westminster Abbey. They were the work of J. T. Groves, architect and clerk of work to St. James's, Whitehall and Westminster. The style of draughtsmanship and colouring suggested acquaintance with the work of Joseph Farrington. It should be noted that artist worked delicately and with care. Every detail was just pencilled in and recourse to the mahogany paint-box supplied by Reeves and Inwood was deferred to the last moment. These two drawings by Groves were of exceptional interest, not only as renderings of a group of Gothic buildings, but by reason of the application of slight colouring to a careful architectural perspective.

At this time the Continent of Europe was closed to English travellers. The short-lived Treaty of Amiens, 1802-3, had opened men's eyes to the scale of the buildings in Paris. When the struggle with Napoleon began again, English architects who had the opportunity journeyed by sea to Greece and further afield. Robert Smirke, the eldest son of the painter, was among the first. His perspective drawings of the Parthenon were now in the British Museum. There was now a passion for Greek art. In 1810, C. R. Cockerell, then a mere youth, left England to begin the tour which established his reputation. Previously in 1806 his father had sent him to study the chief architectural objects of interest in the West of England. From the first Cockerell displayed talent. The sketches he made with a light, sure touch included men, animals, and buildings. A contemporary of Cockerell's, Charles Barry, did not leave England until 1817, to proceed through France to Italy, Greece and Egypt. Barry was a fine pictorial draughtsman and he sketched incessantly. The beauty of his sketches was so apparent that many noted publishers were eager to secure rights of publication. Although architects were studying Roman and Italian buildings, the barometer of taste pointed towards Greece. It was clear, therefore, that the draughtsmanship of the early nineteenth century assisted the Greek revival in a way undreamt of by the pioneers. Other influences, however, were in action. The romantic movement was gaining ground together with an eclecticism that envisioned all antiquity from China to Peru. We had to turn for a brief space to the painters. Two names were prominent, Thomas Daniell, R.A., a painter of landscapes, architecture and Oriental scenery, and the great Turner, who gathered the whole force of late eighteenth century technique into one individualistic expression. Daniell had a considerable reputation as a painter of architectural scenery. But it was his drawings of palaces made during his tour in India that brought him recognition from the Prince of Wales. And these were the drawings which resulted in the instructions to Nash for the Royal Pavilion at Brighton that strange Indo-Georgian pumpkin fantasy which, gimcrack as it is, defied both time and public opinion. Turner, who was born in 1775, began his career by copying the drawings of Paul Sandby and other drawings of buildings which he borrowed. As a boy he worked in the office of Thomas Hardwick, where he made drawings of country houses and tinted architectural elevations. From the outset he was a great collector of drawings, and it was due to his learning in Hardwick's office that he produced such classical compositions as Carthage.

From the foregoing would be deduced, said the speaker, three important facts. The first concerned perspective drawing, which owed its perfection to the elder Malton. The second concerned the skill of the architectural draughtsmen in understanding the requisite atmospheres of buildings, a peculiar quality of the work of the Maltons, father and son. The third point showed the sympathy that existed between the architectural draughtsmen and the painter, particularly so in the matter of figures and accessory groupings.

There could be no doubt that the great advantage of visualising buildings in perspective added to the character of contemporary architecture. The architects conceived their buildings much in the same way as painters determined the treatment of their canvas. In addition, despite the mediæval windings of the streets of the City of London, rarely did we find a building of the period out of place. The rigid formality of the western streets of London, no less than the picturesque grouping of the classical frontages in Regent-street, called for pictorial skill of no mean order. While new guides were in preparation to show current Metropolitan improvements (particu-

lately the volumes prepared by the elder Pugin, assisted by a group of architects) the painters were not inactive in the sphere of topography. He had but to mention, said the lecturer, the names of Cotman, Bonington, Shotter Boys, Frederick and Joseph Nash, Clarkson Stansfield and Prout to show that prior to the invention of photography pictorial draughtsmanship was supreme. In the lesser spheres Scharf was making studies of the London streets, drawing shops, interiors, and street scenes with amazing skill. Neither should the name of George Maddox be forgotten, for it was this teacher who instructed Smirke and Cockerell when they were young.

Draughtsmanship was progressing, the vogue of the architectural perspective had come into being. William Wilkins was content to show his largest building in lines measuring not more than fifteen inches, but Vulliamy and others preferred a framed picture at least three feet wide. The traditional manner of detailed presentation persisted, as did the system of keeping to three tints at the most for the rendering.

So far the general tendencies of the period had been touched upon. It remained to introduce the name of an artist whose work had long been forgotten, John C. Bourne. Thanks to the courtesy of the London Midland and Scottish Railway, the Royal Institute was enabled to exhibit the majority of the drawings he made in 1837. The subject of the drawings was the building of the London and Birmingham Railway. Little was known of the early learning of this brilliant draughtsman, who equalled, if he did not outshine, his contemporary, Shotter Boys. His drawings proved him to have been a master of the pictorial art. Whether he engaged to draw buildings or scenery he never failed to state sufficient to fire the imagination. His drawings, moreover, were masterly in contrast and design.

The Great Exhibition of 1851 came fortuitously to mark the end of an epoch. Colours came to be regarded. It was thought that the millennium was in sight; all works of art were to be presented under glass. Glass shades were the order of the day for locomotive trains and wax fruit. But the exhibition had the effect of concentrating opinion on the value of the old handicrafts, and to-day we owed the founding of the Museum at Kensington, with its manifold treasures, to the venture of 1851. Draughtsmanship in the interior had by no means languished. Architects took their tone from Turner and their figures from Cattermole and Gavarni. The most serious competition was to come from photography. "Photography," exclaimed Frith, "it is a foe to graphic art," and to some extent it became inimical to architecture.

The Institute was fortunate, said the speaker, in possessing some important drawings by Harvey Lonsdale Elmes. These included the first studies for St. George's Hall, and the competition drawing for the Royal Exchange, London. But attention must be given to the two slight bistre drawings of St. George's Hall. The larger of these drawings proved that at the hands of a master superfluous matter could be omitted. As a young man Elmes was influenced by the etchings of Piranesi, which he studied when in the office of the elder Goodridge at Bath. On occasion he could depart from the definitely classical, as, for example, when he competed for the Pauper Schools at Liverpool.

The Roman reconstructions, said the lecturer, loaned by Council of the Royal Academy, included the Temple of Jupiter Capitolinus, the Forum of Nerva, the Temple of Julius Cæsar, Interior of the Ulpian Basilica, and the Tepidarium of the Baths of Caracalla. These masterly drawings showed the skill of Professor Cockerell at his best. There were no other architectural drawings, to his knowledge, showing such economy of effort combined with force. With the exception of the drawing of the Tepidarium, which was in bistre, the other drawings were executed in tempera. The reconstructions were prepared on the information of Canina, with whom the Professor was in close touch. They were prepared by Cockerell for the benefit of the students at the Royal Academy and, together with his famous "Drop Curtain" view of famous buildings, and "a tribute to the memory of Sir Christopher Wren," were a source of inspiration to very young architects. Cockerell was a draughtsman of the first rank. His sketch book showed his versatility. Nothing came amiss to his pencil, pen or brush. Greek detail, landscape, an etching of the Acropolis, a delicate water-colour, intricate mosaic, or delineation of sculpture, he could set anything down.

The superb drawing by John Goldicutt of the interior of St. Peter's at Rome demanded more than ordinary attention. It was not generally known that Goldicutt, when a young man of twenty-three, made a journey to Italy in 1816 to collect material for books on antique architecture. The plates for these works were etched by himself. He spent a whole year measuring the interior of St. Peter's, including studies of the decoration and the paintings. When the drawing was finished, it was shown to the Pope, who presented the young architect with a gold medallion. The drawing was exhibited at the Royal Academy in 1819 and was now in the Institute Collection. Goldicutt's drawings were meticulous in execution; they had the quality of rare illuminated manuscripts. He would recommend, said the speaker, all students competing for the Owen Jones, and, indeed, all interested in colour decoration and presentation, to study Goldicutt's methods. The aim of this architect was to state actual facts with the greatest accuracy in elevation. From the speaker's knowledge of architectural drawings in the famous collections of Rome, Paris and Brussels, he had never seen the equal of this interior of St. Peter's. In the light of present-day experiences, these drawings and the ideals they represented might appear dull, said the lecturer. He asked his hearers to judge them not impertinently as moderns, but impartially as historians. Viewed thus with dispassion, the art of the first half of the nineteenth century passed the test of the magnifying-glass tolerably well. The artists were not deficient in the critical faculty. It was ridiculous to say that the things these men contributed were futile. They could not escape the trammels of their period. Their best works were moulded by local and circumstantial factors. But they had the courage of their convictions, they reverenced the tradition of building, and if they fell into the pitfalls of style, that was the fault of the economic conditions. The landed classes were in a position to control local affairs. Those in a position to employ architects and encourage artists were generally men of broad vision. The Royal Academy was a potent force and not merely an exhibiting society. The rules which circumscribed the arts, militated against individuality, but prevented unbridled license. After the Napoleonic wars all this was to change. Steam-power was invented, and art of the traditional type made vainglorious efforts to keep pace. Hence the use of the Greek Doric Order in cast-iron and Gothic panelling in the same material.

The newer forces of democracy came sweeping on further to upset the equilibrium. Larger and even larger public buildings were needed. The iron order came to the assistance of the old order and made confusion worse confounded. The new wine proved too strong for the old bottles. And yet, with it all, some sort of artistic equilibrium was kept. The architects who had been trained as draughtsmen thought in terms of perspective; their struggle was to maintain discipline. Even the engineers saw, or thought they saw, the force of the argument. The pressure of democracy led to a demand for bigger floor space, and this in turn led to extravagant versions of the styles. It was, therefore, significant of the struggle for democratic expression that the two greatest buildings of the early Victorian period should have been the one Classic and the other Gothic. In reality we had the last symbols of the stand for stylistic tradition. The Exhibition building of 1851 was frankly the handing over of democracy to the engineers. The Germans called it the beginning of modernism.

Viewing these perspective evidences of the art of a century ago, we could not fail to be struck by the consistency of the artists who laboured in very difficult times. The lesson to be learned was that true building must never be bastard engineering and that human ant-heaps were intolerable. Another lesson to be learned was that less than a century ago both architects and the public appreciated discipline in the design of buildings.

Mr. Charles Aitken, proposing a vote of thanks to the lecturer, said Professor Tonks, who unfortunately was not able to be present, had asked him to express his thanks to Professor Richardson for the invaluable assistance which he gave to the Slade School. Professor Richardson was a great enthusiast and had the gift of imparting his enthusiasm to others. The speaker then referred to the fine collection of architectural drawings which they had at the Tate Gallery, by Turner, Girtin, the Sandbys, Holland, Ruskin, Bone and others.

Professor Beresford Pite, seconding the motion, said the whole subject of architectural draughtsmanship had suffered from the discovery of photographic processes of reproduction, and if they reflected on the fact that photographic illustrations almost completely monopolised the architectural journals, they would see why the careful architectural drawing had almost ceased to be. Professor Richardson, he continued, had referred to Piranesi, and they could not attach too much importance to Piranesi as the very latest flower of the Renaissance. The only modern artist who emulated him was Brangwyn, who had the same sense of wonder, the same strength of hand, and the same needle. If they looked into the history of the English watercolour school they would find that it originated in the topographical representation of the buildings of England. The artists who figured in that group furnished a large number of names. Some started with steel engraving, which was supplanted by the discovery of lithography, and the development of architectural drawing in lithography produced a fascinating series of works. The lithographs of Bourne were remarkable. Photographic lithography, however, began in the 'sixties to replace lithography in stone. Gandy, the speaker thought, was a more important man than some supposed; he acted as partner with Wilkins, and the University College building in Gower-street, and the National Gallery in Trafalgar-square were really to be credited to Gandy.

Mr. J. L. Hodgson said he agreed with the last speaker on the subject of photography. They would never get the care in selection and design in a photograph that they would in a drawing. Bourne was an amazing artist—in perspective, composition and contrast of light and shade—and they should, he thought, try to get back more to that quality of work.

Mr. Jasper Salwey said it was strange that more use was not made of perspective drawing. The rebuilding of London which was going on, and such schemes as the Charing Cross Bridge project, provided an opportunity for some amazing drawings.

Mr. W. J. H. Leverton recalled that Barry's drawings for the Houses of Parliament were all at the Office of Works.

Mr. J. S. Cleland (from South Africa) and Mr. Louis S. Robertson (from Australia) having spoken, the President, in putting the vote to the meeting, said he always looked forward to seeing an architectural fantasy by Professor Richardson in the New Year's issue of *The Builder*. Professor Richardson was an accomplished and most delicate draughtsman and full of that imagination that every architect should possess, and it was a great pleasure that they should have such a man at the head of one of our schools of architecture.

Professor Richardson briefly replied.

THE ROYAL SCOTTISH ACADEMY

This year the most prominent feature of the architecture room, at the Royal Scottish Academy is a memorial exhibition of the works of the late Sir Robert Lorimer. Here was a personality which completely dominated Scottish architecture and created a sphere of influence unlike that of any other architect of our time. There is an unswerving tenacity of purpose in all Lorimer's work which compels admiration. He seems always to have been so sure of what he wanted to do and so able and masterful in his handling of technique to achieve the desired result. His attitude was entirely personal and non-academic, and even his Gothic work, done under the serene influence of the Bodley school, betrays a strong uneasiness at the shackles of convention. Indeed, in the Thistle Chapel it is this uneasiness, this fiery assertion of the rights of personality over technique that gives the building its powerful and unusual beauty. The exhibition embraces the whole range of Lorimer's practice. There are the charming early houses at Earlshall and Corstorphine, the Gothic woodwork at Dunblane and Lattingtown, the restorations at Perth and Paisley and, of course, the Scottish National War Memorial. Perhaps the latter is the supreme instance of the architect's intuitive and imaginative genius, which enabled him to create a memorial so completely and unquestionably in accord with national sentiment.

The remainder of the exhibits fall conveniently into ecclesiastical, scholastic and domestic categories. An important piece of church architecture is the new Cathedral which Mr. H. O. Tarbolton has designed for Oban. There are two perspectives of this, but one suspects that neither of them does justice to the design. Moreover, criticism is hampered by the absence of a plan. The east end is modelled in a grim, downright fashion, Gothic in intent, but employing classic features without much hesitation. The western portion, with a tower and porch at the south-west corner, shows a rather more poetical handling and rises from a plinth, which presumably disappears somewhere in the side elevation, for it is not shown in the drawing of the east end. In the execution of this design, so rigorously and vigorously Scottish, much will depend upon the quality of the masonry. Mr. Reginald Fairlie shows two churches, both of which the characteristic of his work. The one at Rothesay displays the Norman style used in a surprising but very interesting and delightful way; the perspective, by Mr. Basil Spence, is delightful, too. The other church, at Dundee, is a very simple affair, with plain flat ceiling over a wide nave and a plain brick chancel arch. Mr. Fairlie also shows a fine design for choir-stalls in the chapel at St. Andrews' University. Mr. James Miller exhibits a perspective of the interior of Stirling church as it will appear if the proposed removal of the seventeenth-century partition-wall takes place; a restoration devoutly to be wished. A design for a new church in Northumberland, very spirited and original in conception, is by Mr. William Davidson (see p. 851).

There are two important school-designs. Mr. Miller's scheme for the Wyggeston Grammar School is truly monumental, a very able achievement within a strictly limited scale of architectonic resources; the modelling of the central doorway, of stone within a brick arch, is particularly fine. The George Watson's Boys' College, by Mr. James Dunn, is another admirable design, whose refinement is emphasised in two elegant pencil drawings by Mr. Robert H. Matthew, last year's Pugin student. Both these designs are illustrated in perspective only, though in each case it is a carefully constructed plan which has resulted in these agreeable and well-balanced elevations.

Of several interesting domestic designs, one which is particularly charming, as well as rather unusual, is a house at Murrayfield, by Mr. Leslie Thomson. The curious ingenuity of the plan rivals in excellence the accomplished suavity of the garden-front, which looks, in Mr. Spence's drawing, rather more like Biarritz than Edinburgh; but the terrace of squared-rubble is reassuring. That every view of the house will be as completely captivating as the one shown in perspective is hardly to be expected considering the shape of the plan, but it is good to see a design where imagination has played such a conspicuously active part. Two country houses in widely distant parts of Britain are exhibited by Mr. Dunn, whose feeling for the *genius loci* has prompted him to the use of Scottish gables near Elgin, and Georgian brickwork at Pinner (see pp. 852-856). Mr. A. N. Paterson shows a drawing of a garden terrace and Mr. J. A. Morris photographs of some picturesque interior work.

In a category of its own must be noticed the series of photographs illustrating Mr. James M'Lachlan's work in Crawford's tea-shops in Hanover-street, Edinburgh, and on the Shore at Leith. Edinburgh is fortunate in possessing tea-shops whose interior decorations are as good as these, for they are quite first-rate. In the Hanover-street shop Mr. M'Lachlan was associated with Mr. Robert Burns, the painter, in designing the exquisite Chinese room. At Leith, where the architect designed the entire building, the shop-front problem has been very gracefully solved, though the masonry details above might perhaps be criticised for their extreme smallness of scale.

As in previous years, a number of works by London architects, exhibited in last season's Royal Academy, are to be found among the drawings, and two of Mr. Walcot's classical reconstructions serve to enliven the walls with their vivid colouring.

In the sculpture hall there is a very striking display of recent French work. The places of honour are occupied by Despiau and Bernard with splendid examples of their work, and there are some of Pompon's animals, besides things by less-known men like Drivier, Artus, Dejean, Marque, and Sicard. It would not be fair to attempt a comparison between the work of these distinguished Frenchmen and the exhibited work of Scottish sculptors, but it would be doing less than justice to the latter to suppose that they are not "in the running," for there is good work being done in Scotland.

Among the Frenchmen there are few who do not owe something to Maillol, the genius who still manages to guide French sculpture along a sane, classical path, in spite of a welter of unrest in the world of painting. Men of the school of Maillol are abstract, without sacrificing everything to abstraction; they do not distort (or hardly at all), and yet the chief interest of their works lies in the disposition of the component volumes and the rhythmic relation of planes. The abstract intention is emphasised, it is true, by a certain simplification and stylisation of the model, but this only adds to the charm of the work and gives it a coherence and significance which would not otherwise be achieved. Bernard's bronze "Water-carrier" (the original is in the Luxembourg) is typical of his work. The "Girl Dancing"

Royal Scottish Academy Exhibition, 1930.

St. Nicholas: Water-colour Sketch of Mosaic in Recess at Gallery over main entrance of St. Mark's, Venice (Middle Sixteenth Century).

By Mr. William Davidson, F.R.I.B.A.

is perhaps even finer, a spirited piece of work, which might surely be acquired to bring a little gaiety to one of our dreary municipal parks. Despiau's massive torso, at first almost repellent in its weighty statement of primitive beauty of volume, underlines the most significant traits of modernism in sculpture; it is positively architectural in its calm and logical construction.

Pompon's animals are entirely captivating. There is a little marble copy of his famous polar bear, also a bronze pig and a crested crane—both quite small. These exquisite pieces contain all the magic of beasts in motion, perfectly comprehended, and expressed in the simplest and happiest way imaginable. Of the other French pieces, one, a superb torso, is by Drivier, two are by Dejean and three by Artus; there are two bronze heads by Sicard, rather reminiscent of the Rodin school.

Passing to the works of British sculptors, among the most striking things are the bronzes of Benno Schotz, very sensitively and surely modelled. William Lamb has several exhibits, including a "Boy with Catapult," a nude displaying a very precise observation of surface modulations. Percy Portsmouth contributes a fine portrait bust, Phyllis Bone a skilful "Grizzly Bear," Norman Forrest a delicate statuette in limewood, while a number of other sculptors have sent in very admirable, but rather uninteresting, pieces.

Among the more decorative sculptures may be noted an extremely pleasing "Madonna and Child," by Thomas Whalen, and a large panel for a church by Alexander Carrick; of particular interest to architects is a portrait in relief of Thomas Hamilton, R.S.A., done for the Royal High School. This is by David A. Francis.

THE ARCHITECTURAL ASSOCIATION

AERIAL SURVEYING AND ARCHÆOLOGY.

An ordinary general meeting of the Architectural Association was held at Bedford Square on Monday evening, Mr. F. Winton Newman (President of the Association) occupying the chair.

Mr. O. G. S. Crawford gave an address on "Aerial Surveying and Archæology," and by means of lantern slides showed how, seen from the air, Roman and earlier camps and habitations become visible by markings on the ground, which markings sometimes become still more evident when photographed. Most of the photographs shown were those of sites which were inhabited just before the Roman invasion, but some were older. In one interesting case there was not only a native camp with the native earthen walls surrounding it, but in one corner of this was a Roman camp, laid out in a totally different way. At a glance one saw the difference between the straight orderly lay-out of the Roman camp and the irregular and very much bigger lay-out of the pre-Roman defences.

The lecturer explained that by air photography streets and roads were shown better than by any map; but, generally speaking, the air photograph did not reveal anything which could not be discovered by other means. At times, however, new and distinct features, previously entirely unknown, were brought to light. Such a case occurred when, near Goodwood, in Sussex, the site of a pre-Roman village was discovered. In this case, besides the outer circle of the ancient walls, there was an inner circle, which looked very much older than the rest of the camp. Before an air photograph was taken the existence of this inner circle was unknown; but now that it was known to be there it could be seen, though not readily, by anyone who walked over the ground. The inner circle having been discovered by air photography, Sussex archæologists had excavated both the circles two years ago, and had found, as was to be expected, that the inner circle was the remains of a neolithic camp. The outer circle had enclosed a camp of the iron age, and the people of this age had obliterated part of the neolithic ditch and camp when they made their own. On Salisbury plain a similar example was found—the outer ramparts of a camp of the iron age, with the fainter lines within of a neolithic camp. On this site an annual cattle fair had been held until 1917, this fair being possibly an interesting link with prehistoric times, when primitive people herded their cattle on the open Downs.

The lecturer explained how the farmer's crops at times assisted air photography. For instance, the presence of an ancient ditch, one that had never been a ditch in human memory, that had perhaps been filled in Roman times, would nevertheless be indicated by the condition of the crop. The ditch being filled with moister and richer soil, the crop would grow greener and stronger there, and so the line of the ditch would be marked.

Caistor, near Norwich, the market town of the Iceni—Boadicea's people—was among the examples shown. In this case the Roman wall is still standing and excavation is going on. One air photograph of this site was comparatively featureless, presenting a dull matt surface, but another, taken under exceptionally favourable conditions, brought out details showing the whole outline of the town.

Among things which air photography had brought to light, said the lecturer, were the borders of pre-historic fields. Soil ploughed on a slope gradually travelled down and piled up on the lower side of the slope forming a bank called a lynchet. This lynchet formed along the edge of a field, and when the field was no longer cultivated the lynchet remained to show where the field had been. Thus, on the South Downs, air photography revealed the plans of fields and groups of fields exactly as they were abandoned by their Celtic cultivators. One such example thrown on the screen showed in the middle of the fields the foundations of a long rectangular building—the farmhouse where the primitive people had lived. One curious example showed marks done probably in Napoleonic times—when a great deal of the Downs were under the plough—crossing the lines of the older ploughing at an angle.

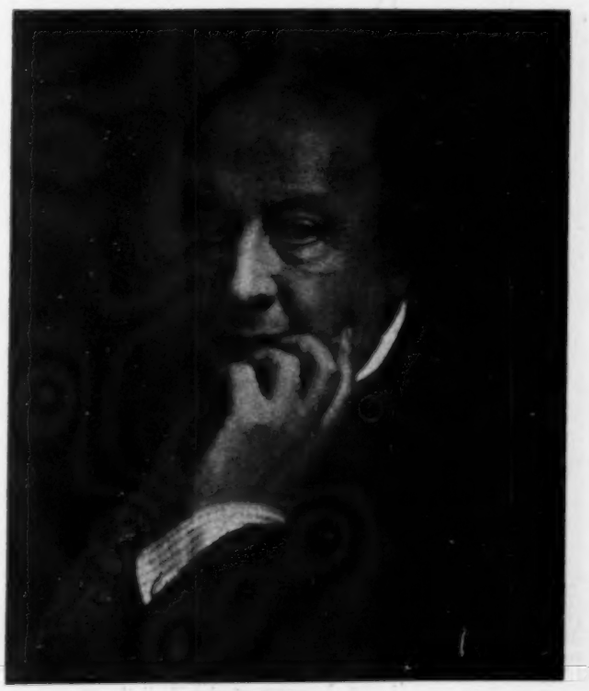
Disc barrows, consisting generally of a mound with a ditch round, were among the remains illustrated. These dated from about 1500 B.C. Some illustrated, situated about ten miles south of Salisbury, were said by the lecturer to be among the best preserved in England. When they were excavated there was found in each a human burial place with a few beads and possibly a bronze dagger. Air photographs showed these barrows, and also the marks of the ploughing that took place over them in Celtic times.

Among the most interesting discoveries made by air photography were two of sites of temples, such as that of Stonehenge but smaller and made of wood. For the first of these, discovered in 1926, the name of Woodhenge had been invented. This one was near Salisbury, the other was near Caistor.

A vote of thanks was heartily accorded, and the lecturer briefly replied.

SIR EDWIN COOPER A.R.A.

Sir Edwin Cooper, who has just been elected an Associate of the Royal Academy, is 56 years of age. Many years ago he made a name for himself as a master of planning. Chief among his important London buildings is the new home of Lloyds in Leadenhall-street, which the King, when he opened it two years ago, justly described as "a notable triumph of modern classical architecture." Sir Edwin was made hon. member of Lloyd's to mark the occasion. Among his other works are the Royal Mail building, also in Leadenhall-street, where he ingeniously overcame the difficulties of an awkward site; the offices of the Port of London Authority, Tower Hill; the Star and Garter War Memorial at Richmond; Marylebone Town Hall; the extension of Gray's Inn Library; the Bio-Chemical Schools at Cambridge; and many others, which will be familiar to our readers from the illustrations which have appeared in our pages. Sir Edwin has a clever medical daughter, Sybil, who is a Research Fellow of St. Hilda's, Oxford, and his son Peter is a B.A. of Cambridge.



Sir Edwin Cooper, A.R.A.

ILLUSTRATIONS

PLATES

Tilbury Baggage Hall.

The new building provided by the Port of London Authority to receive Customs in connection with the new landing-stage is built upon a ferro-concrete platform provided for the purpose. The hall itself is in brick, the internal dimensions being 75 ft. wide, 293 ft. long, 43 ft. high to the top of parapet. Owing to the bridges and booms connecting it with the landing-stage and the liners, except from an aerial view it is difficult to realise its size and accommodation from the outside; but immediately passengers have crossed the bridges they enter into an impressive hall treated in a simple and dignified manner, showing the Authority's arms at one end, with a long barrel plaster roof. The hall is flooded with light, and ample space is provided for the passengers to find their respective luggage, the Customs benches being arranged down the centre to meet the requirements of the Customs officers. Easy exits are arranged, connected with the new station built by the L.M.S. It will be noted that the materials used in the erection of this hall are of a simple character for hard use, yet give a result that cannot fail to impress the visitor to the London Docks of the thought and convenience the Port of London have given to their comfort in dealing with baggage and easy access to the railway station.

The design and erection of the baggage hall have been carried out by Sir Edwin Cooper, A.R.A., the architect for the Authority's head building; the platform and foundations and landing-stage by the engineer, Mr. F. Palmer, consulting engineer, and Mr. F. W. Davis, the Port of London Authority's chief engineer for new works; the builders being Messrs. John Mowlem and Co., Ltd. The clerk of works was Mr. H. Whittaker.

Proposed New Church of St. Barbara at Shilbottle, Northumberland.

The plan of this church is practically symmetrical on the long axis except for the circular tower at the west end of the south aisle. The transepts are slightly inclined so that their central axes radiate from the pulpit and lectern. This is somewhat reminiscent of certain of the chapels at Canterbury. The church is seated to accommodate about 350, and might be enlarged by adding to the north and south ends of the transepts. The transepts have separate porches for exits. What is usually the north porch has been utilised as a baptistery. The placing of the choir vestry and the clergy vestry diagonally between the chancel and transepts gives an impression of considered grouping in relation to the aspects from the north-east and south-east. The stepping of the transept wallhead on the east side is necessary to take up the skew on the roof which the angle treatment of transepts entails. Flying buttresses from the nave walls finish on pinnacled piers, which have 7 ft. figures on their faces supported on corbels. The aisle roof arches also act as buttresses. The external elevations are treated in a simple manner in squared rubble with dressed corners, and the ecclesiastical effect is dependent largely on the use of figure sculpture. While in execution the stained glass cross in the east gable might be somewhat theatrical, it is considered worth the experiment, as it would give a luminous cross by day from the inside and by night (when the church is lit) from the outside. The figure work on the east gable is:—On the parapet, Christ and adoring angels; beside the cross, the Virgin and St. John; in the angles at the ground floor, Judas and Mary Magdalene. The remainder of the apostles would be on the faces of the buttresses on the north and south elevation. The general arrangement of the plan at the east end was suggested by the plan of the chapel at Warkworth Castle. Mr. William Davidson, F.R.I.B.A., is the architect.

House at Pinner, Middlesex.

This house has been recently erected. It is built of orange-coloured bricks with purple facings, and the roof is covered with Collier's sand-faced, dun-coloured roofing tiles. The internal finishings are of Port Orford pine, and the finishings of the long room are of British oak. The contractors were Messrs. Charles Brightman and Son, Ltd., of Watford, Herts.

Mr. James B. Dunn, R.S.A., F.R.I.B.A., is the architect.

House at Elgin.

Now in course of erection for Mr. E. S. Harrison, this house is situated about two miles out of Elgin. The materials used are irregular multi-coloured rubble from local quarries, the dressings being from Newton Quarry, in the immediate neighbourhood. The slates are thick russet slates from Knockfergan Quarries, Inverness-shire. The internal finishings are in Port Orford pine, and the staircase is of British oak (bleached).

The contractors are as follows:—Mason work, Messrs. Davidson and Hay; joiner work, Mr. W. H. McKilligan; plumber work, Messrs. Wm. Lyon and Sons; plaster and concrete work, Messrs. J. Brodie and Son; and slater work, Messrs. George Bain and Sons—all of Elgin.

Mr. James B. Dunn, R.S.A., F.R.I.B.A., is the architect.

New Block, "Oakwood Court," Kensington.

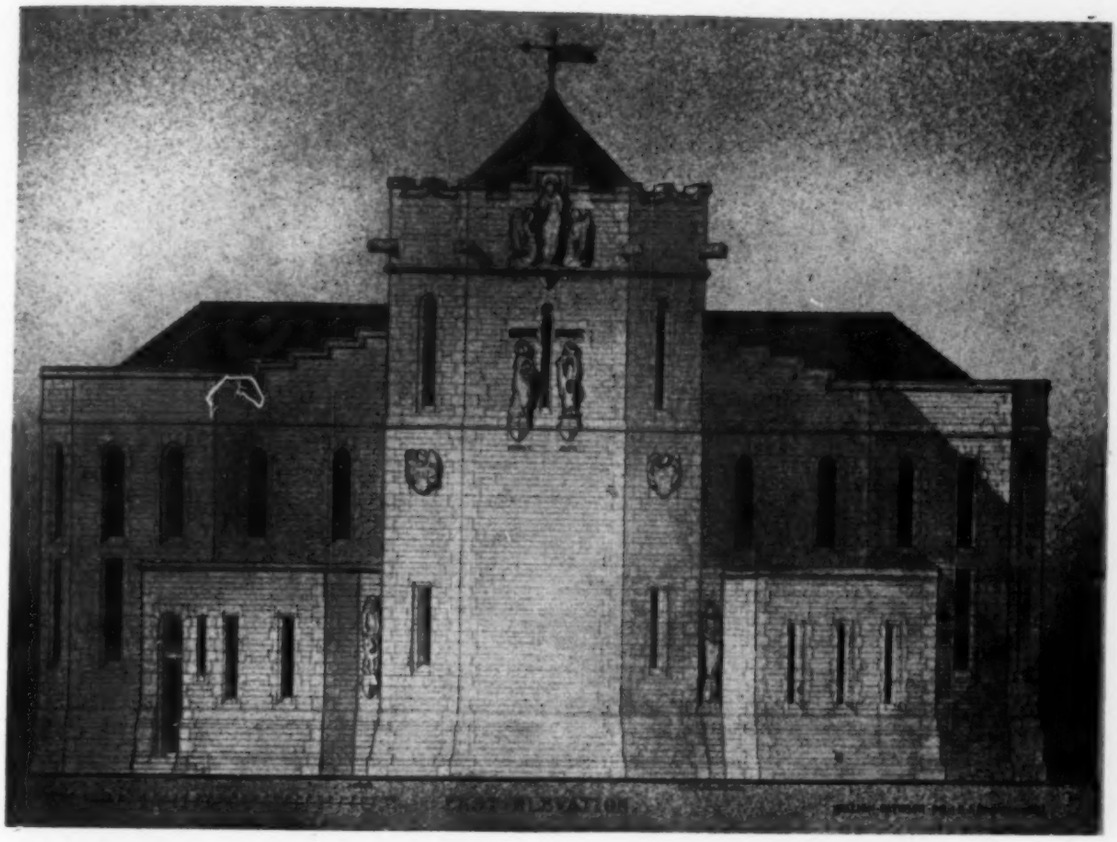
"Oakwood Court" is situated between Kensington High-street and Holland House,

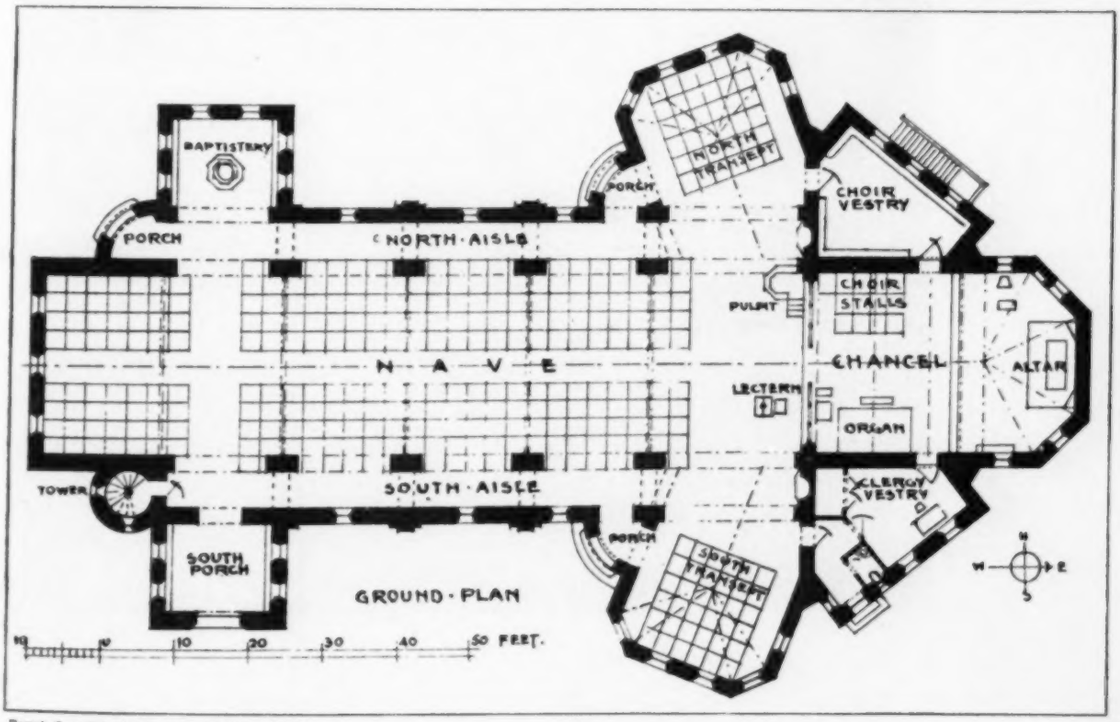
(*Continued on page* 856.)

Royal Scottish Academy Exhibition, 1930.

"The Woman at the Well." By Mr. Alexander Carrick, R.S.A.

(To be carried out in stone on the Reid Memorial Church, Edinburgh. Mr. Leslie Thomson, A.R.I.B.A., Architect.)

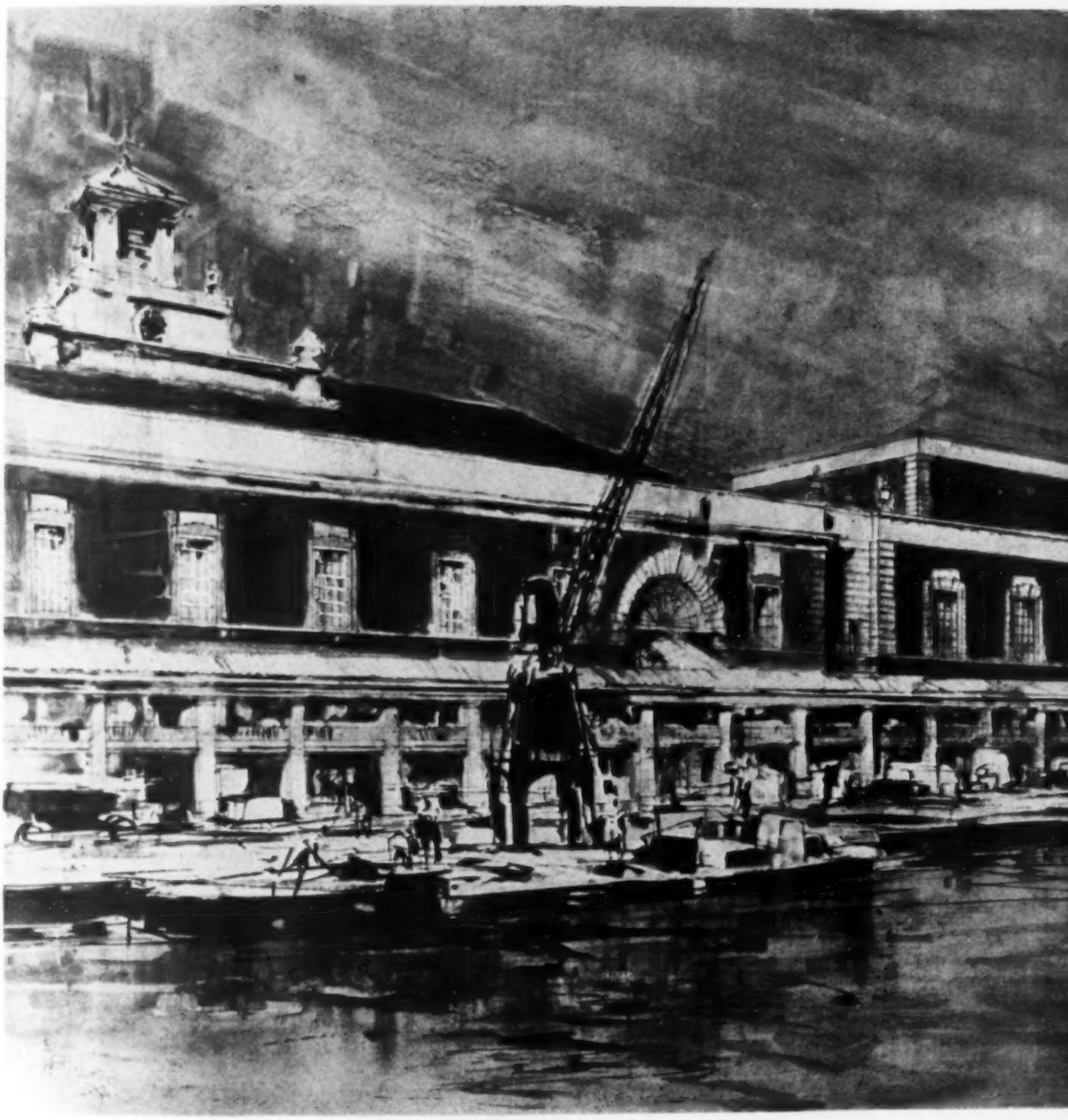




Royal Scottish Academy Exhibition, 1930.

Proposed New Church of St. Barbara, Shilbottle, Northumberland.

Mr. William Davidson, F.R.I.B.A., Architect.

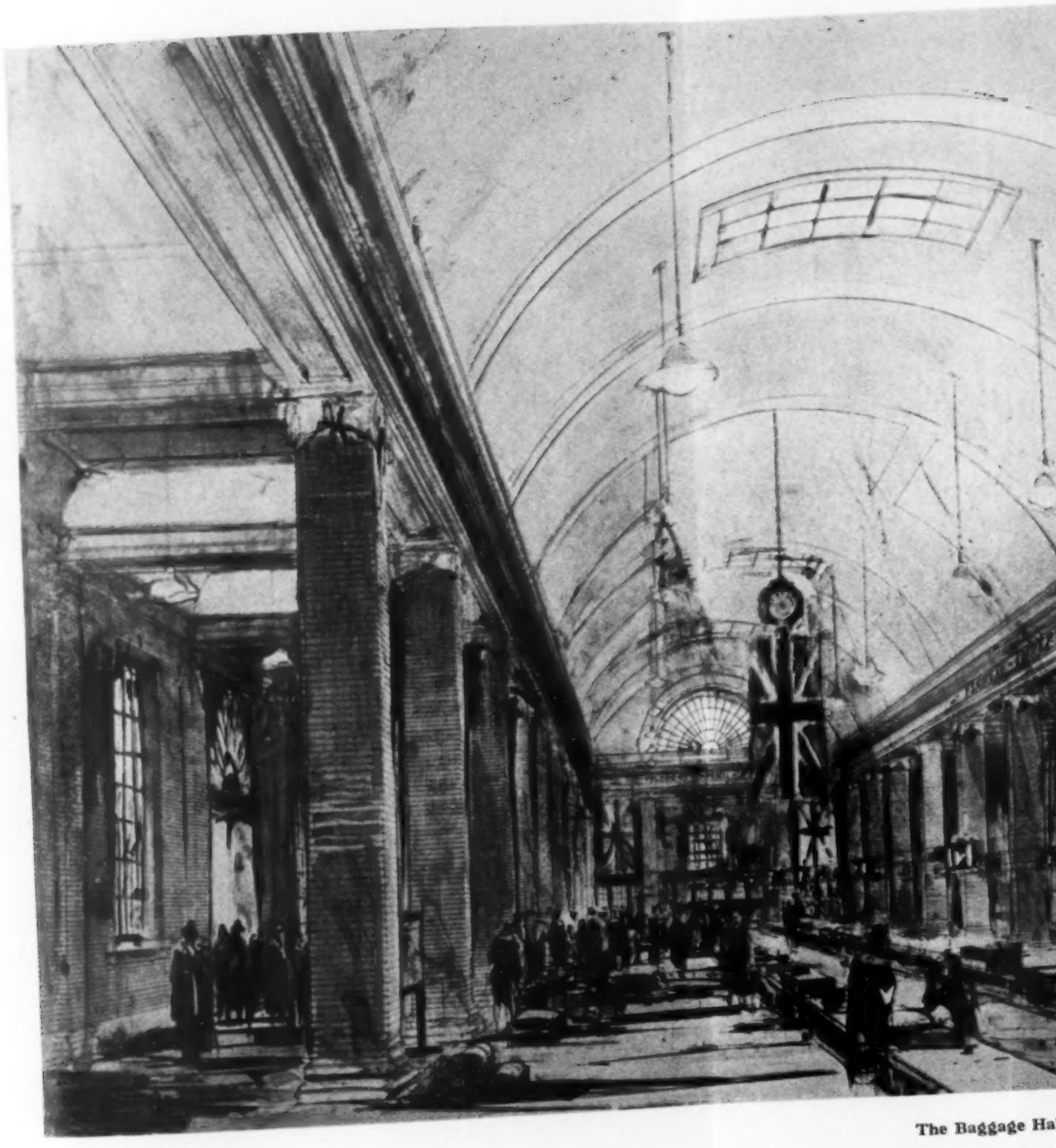


The Baggage Hall, '

SIR EDWIN COOPER, A.R.

ɡgage Hall, Tilbury.

Cooper, A.R.A., Architect.



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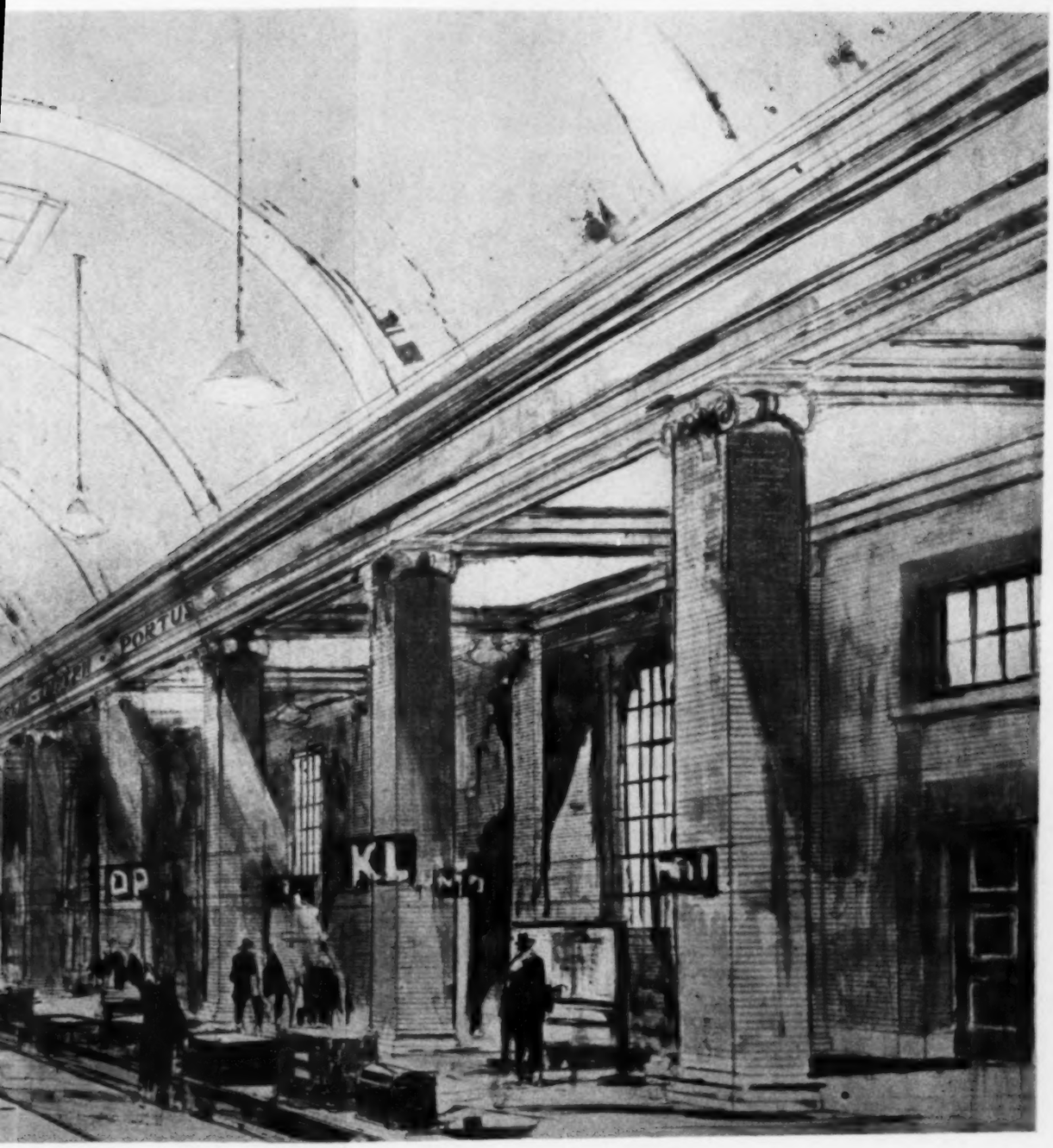
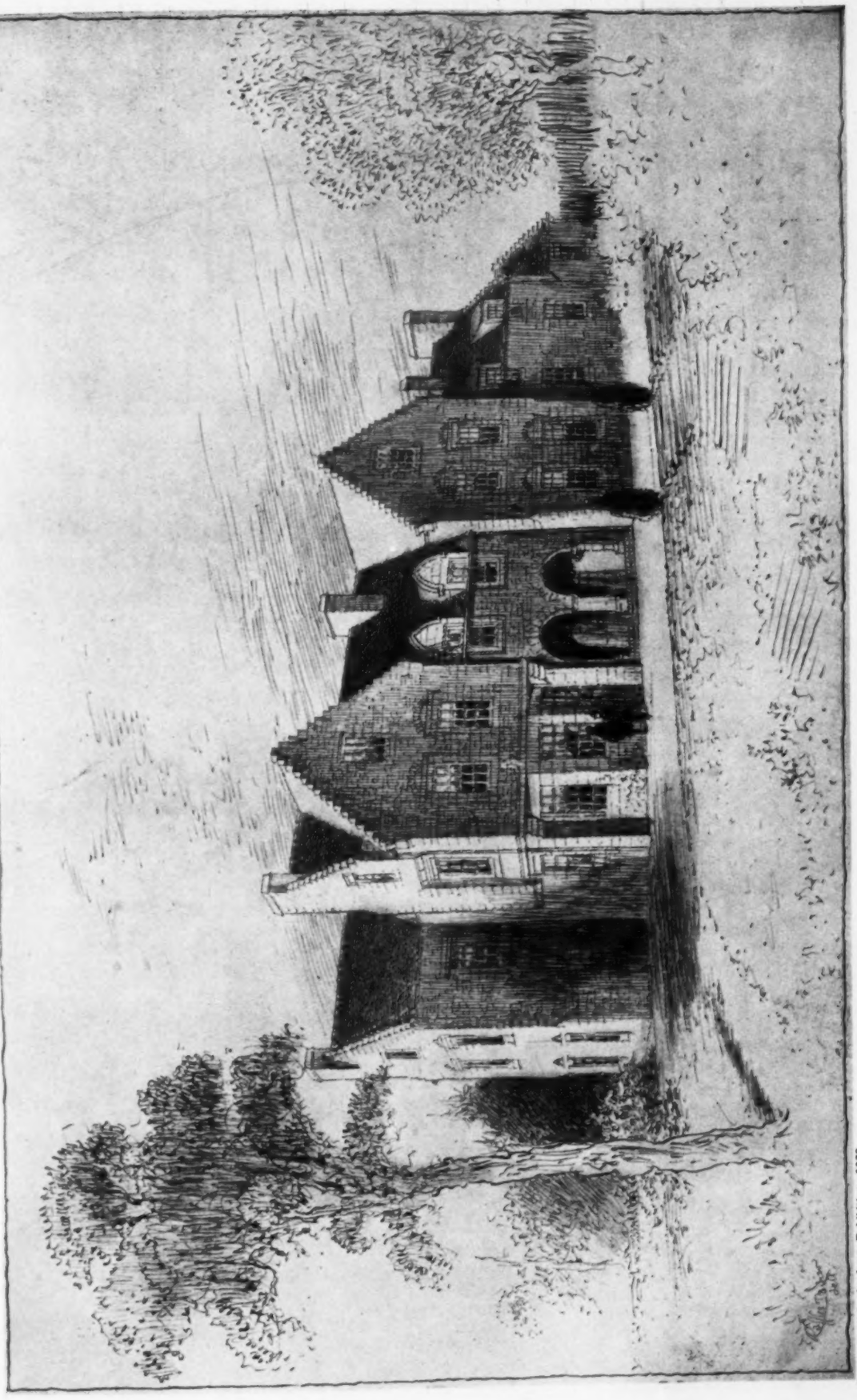


age Hall, Tilbury.

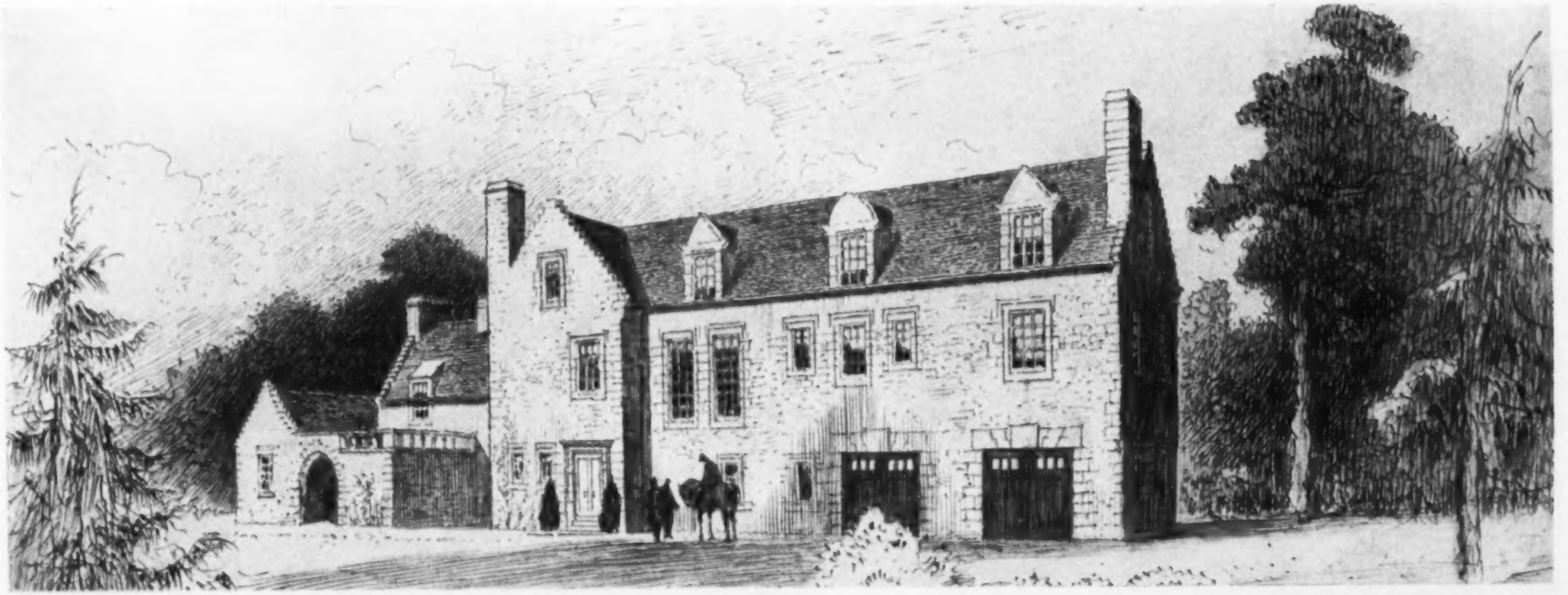
OPER, A.R.A., Architect.

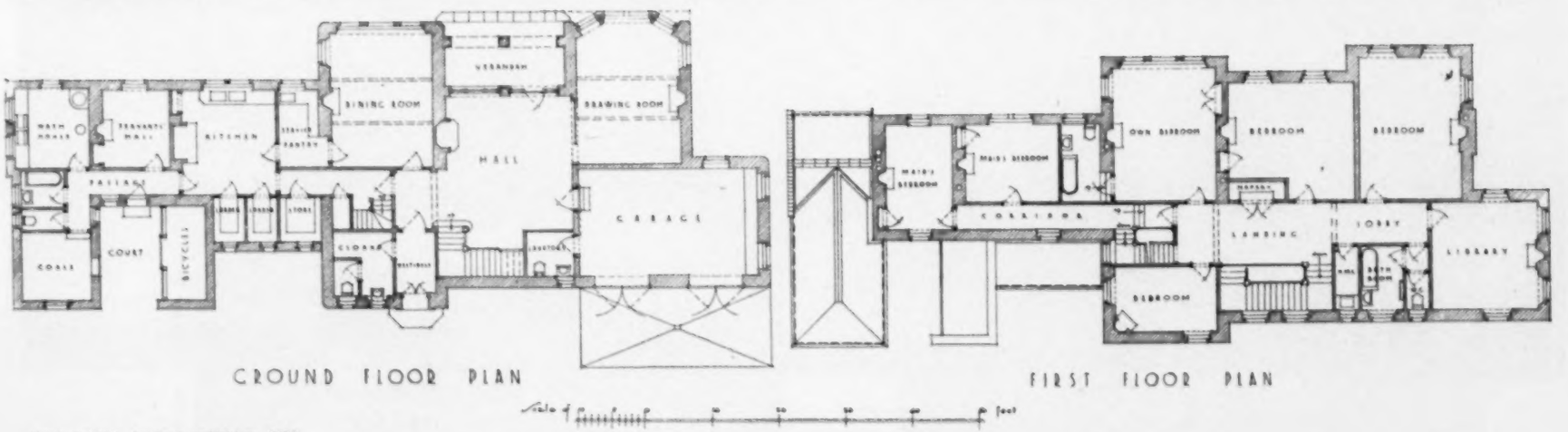


House near Elgin: Entrance Front.

Mr. James B. Dunn, R.S.A., F.R.I.B.A., Architect.

Royal Scottish Academy Exhibition, 1930.

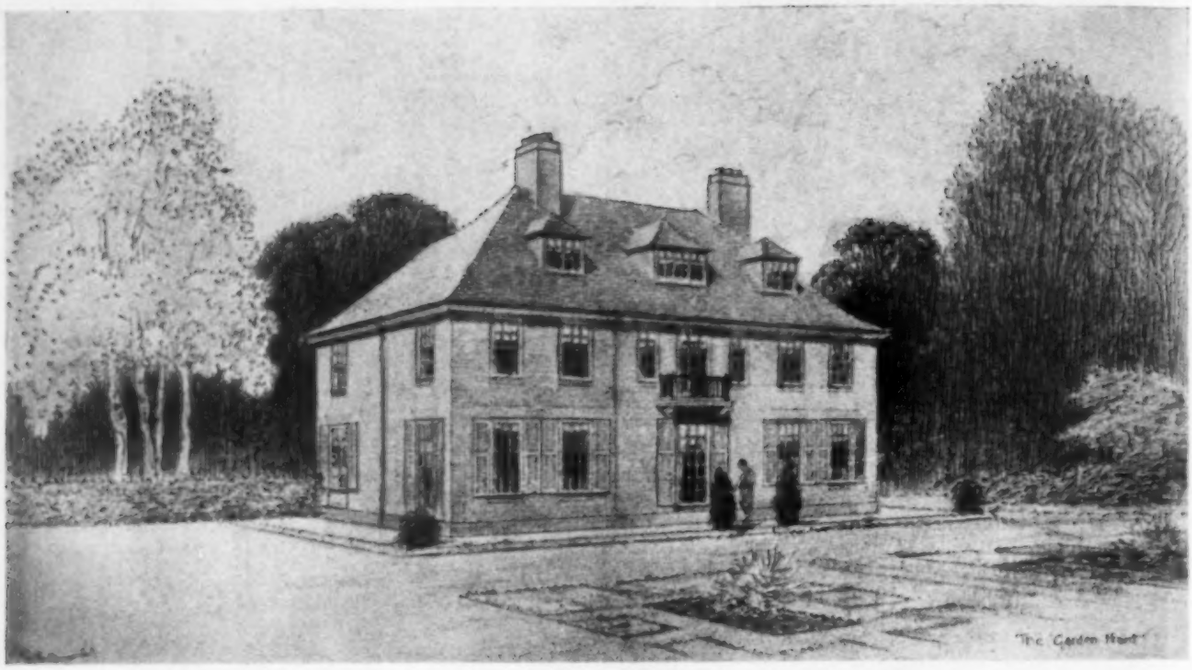




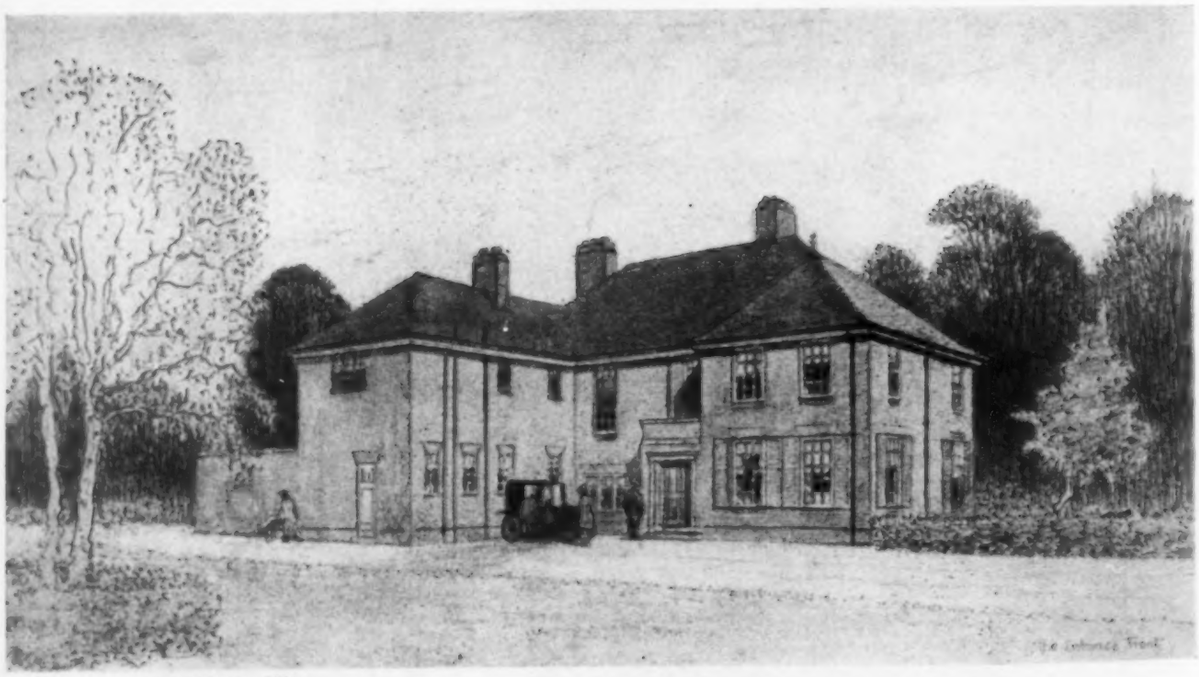
Royal Scottish Academy Exhibition, 1930.

House near Elgin: Rear View.

MR. JAMES B. DUNN, R.S.A., F.R.I.B.A., Architect.



GARDEN FRONT.

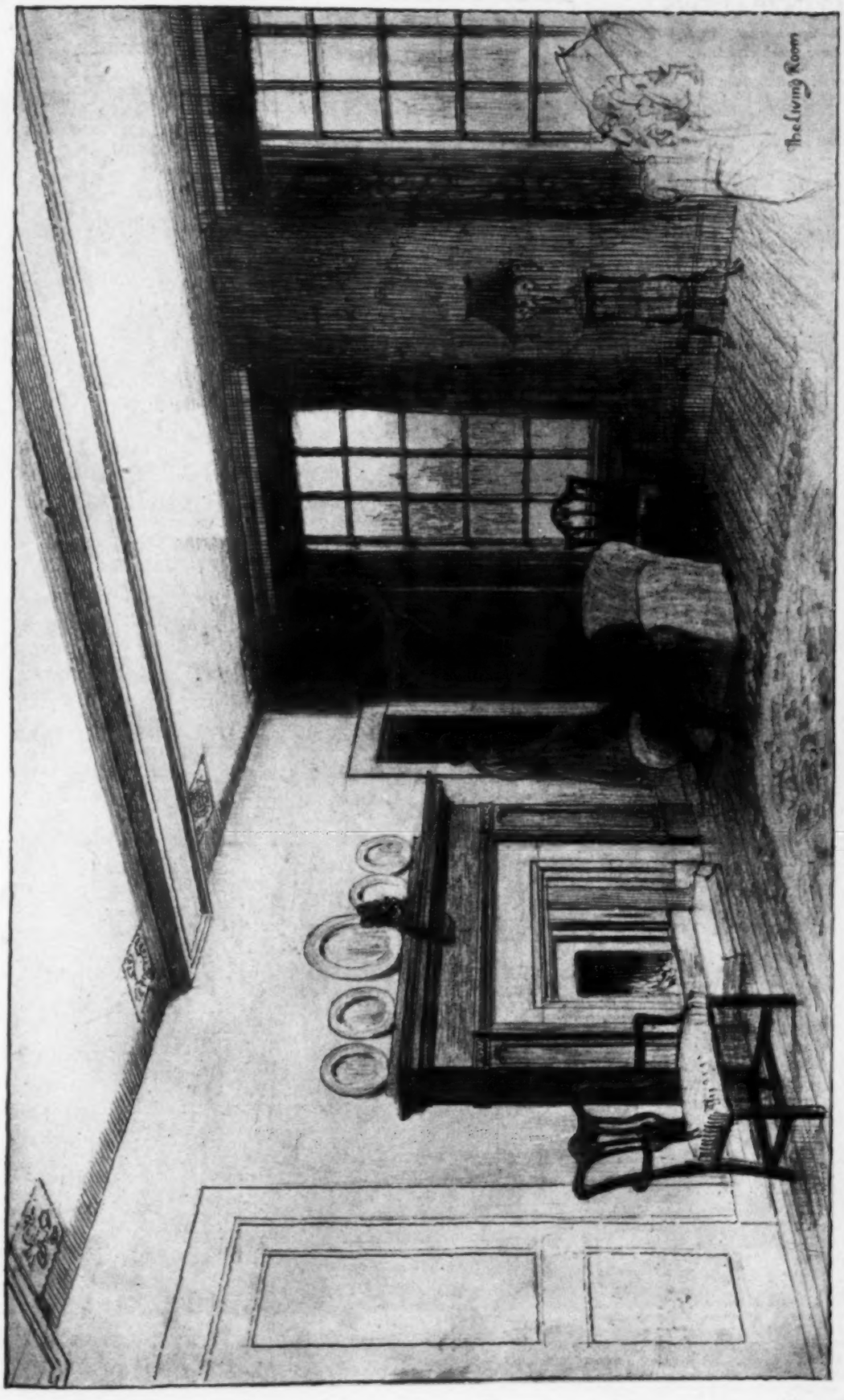


Royal Scottish Academy Exhibition, 1930.

ENTRANCE FRONT.

House at Pinner, Middlesex.

MR. JAMES B. DUNN, R.S.A., F.R.I.B.A., Architect.



House at Pinner, Middlesex.

Mr. James B. Dunn, R.S.A., F.R.I.B.A., Architect.

ILLUSTRATIONS

Continued from page 850

in a secluded, quiet situation. The new block, which comes in between existing blocks of flats, comprises forty-four flats. The building has been designed to provide a spacious courtyard, facing due south, so that every flat obtains some sunshine during the day. Another feature of the planning is the absence of any internal areas. The building is built of red brick, to harmonise with the adjoining blocks, with cornice and string courses of terra cotta.

The general contractors were Messrs. John Knox and Dyke, Ltd. The domestic boilers are oil fired, the installation being carried out by Messrs. Comyn, Ching and Co. Amongst the sub-contractors were the following:—Leeds Fireclay Co., sanitary and terra cotta; Express Lift Co., passenger lifts; F. A. Norris and Co., escape staircase; Doodson and Bain, windows.

The architects were Messrs. Richardson and Gill, FF.R.I.B.A., of Russell-square.

Public Baths, etc., Westminster.

A description of the roofs of these new buildings, which are now in course of erection from the designs of Messrs. A. W. S. & K. M. B. Cross, is given on page 867.

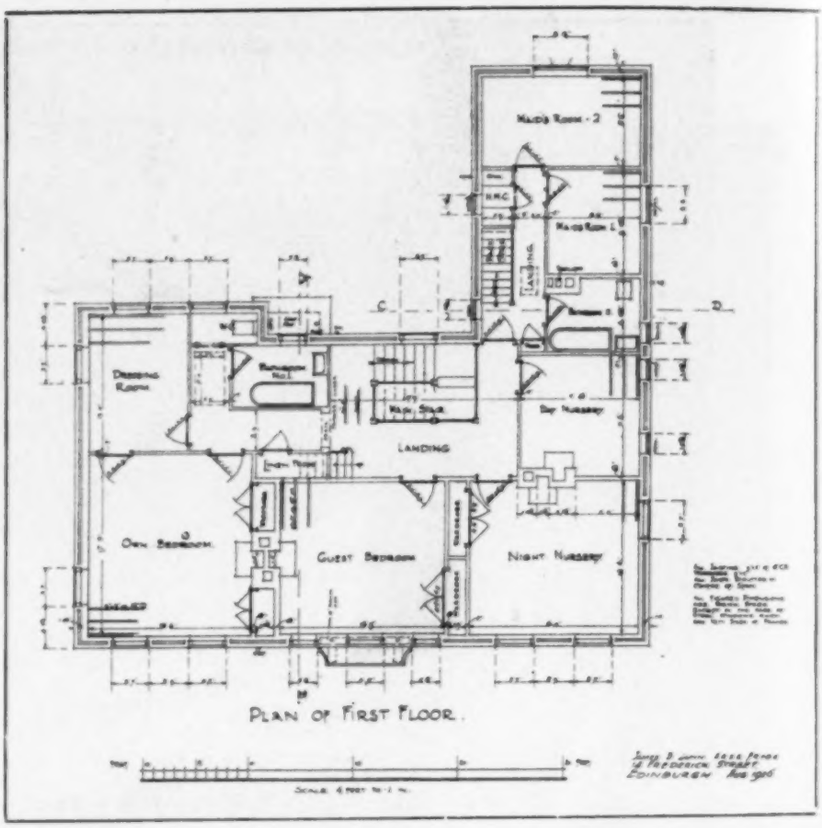
St. Nicholas, St. Mark's, Venice.

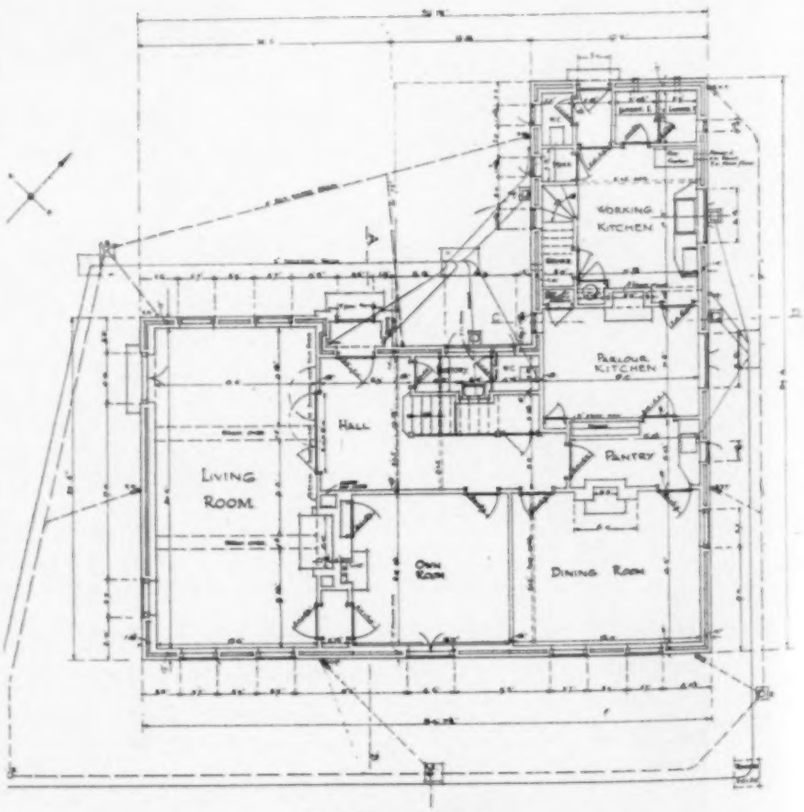
This panel, a mosaic in recess at gallery over main entrance of St. Mark's Cathedral, Venice (see p. 848 for water-colour sketch by Mr. William Davidson, F.R.I.B.A.), is about 5 ft. 11 in. by 3 ft. 4 in., and dates from 1545. The cubes average nine to the inch. For mosaic work this figure is too realistically treated, but it is an excellent example of this period. It has not the decorative charm of the eleventh-century work in the nave aisles of St. Mark's, which in some respects is more suitable for architectural decoration than the early Byzantine work at Ravenna. The figure is well posed on an old-gold background in an arched recess about 13 in. deep. The ingo of the recess is decorated in mosaic of a rococo design in cream and blue, with a black line on a gold ground. The colours of the vestments are:—Alb, cream; chasuble, gold diaper on a crimson ground. The orphrey is decorated with quaint little figures in blue and green. The placing of the lettering S-Nicolaus and its relation to the crook of the pastoral staff is rather happy and steadies the design in a satisfactory manner. At the foot we are told that Ettor Lochatellus made it. The pictorial nature of the figure is partly due to the use of small cubes, but they are larger than we find in many examples of Pompeian work.

"THE BUILDER" DEBATE

XXVIII.—THE R.I.B.A. SCALE OF CHARGES.

SIR,—I am somewhat surprised that neither parties to the debate discussed a point which seems to me of serious moment. I have always thought that it is a weak plank in the architect's position that he should be rendered suspect of swelling the cost of a job, owing to his receiving commission upon extras. One has to differentiate between considerable bulk additions prompted by the employer, and the minor extras which almost all contracts include. The commission on these latter are trifling, and yet a good many people have it in their minds that it pays the architect to mount up the cost. He is therefore handicapped when he wishes to advise some improvement which occurs to him during the course of the work, or in advocating the selection of a better class article. If it were made a rule that his fees were based on the actual contract sum, irrespective of the adjusted total showing an extra or a saving, his position would be very much stronger with the sort of person who expects self-seeking. One might perhaps limit this to extras totalling less than £100, or less than a certain percentage of the total contract. FREEDOM.

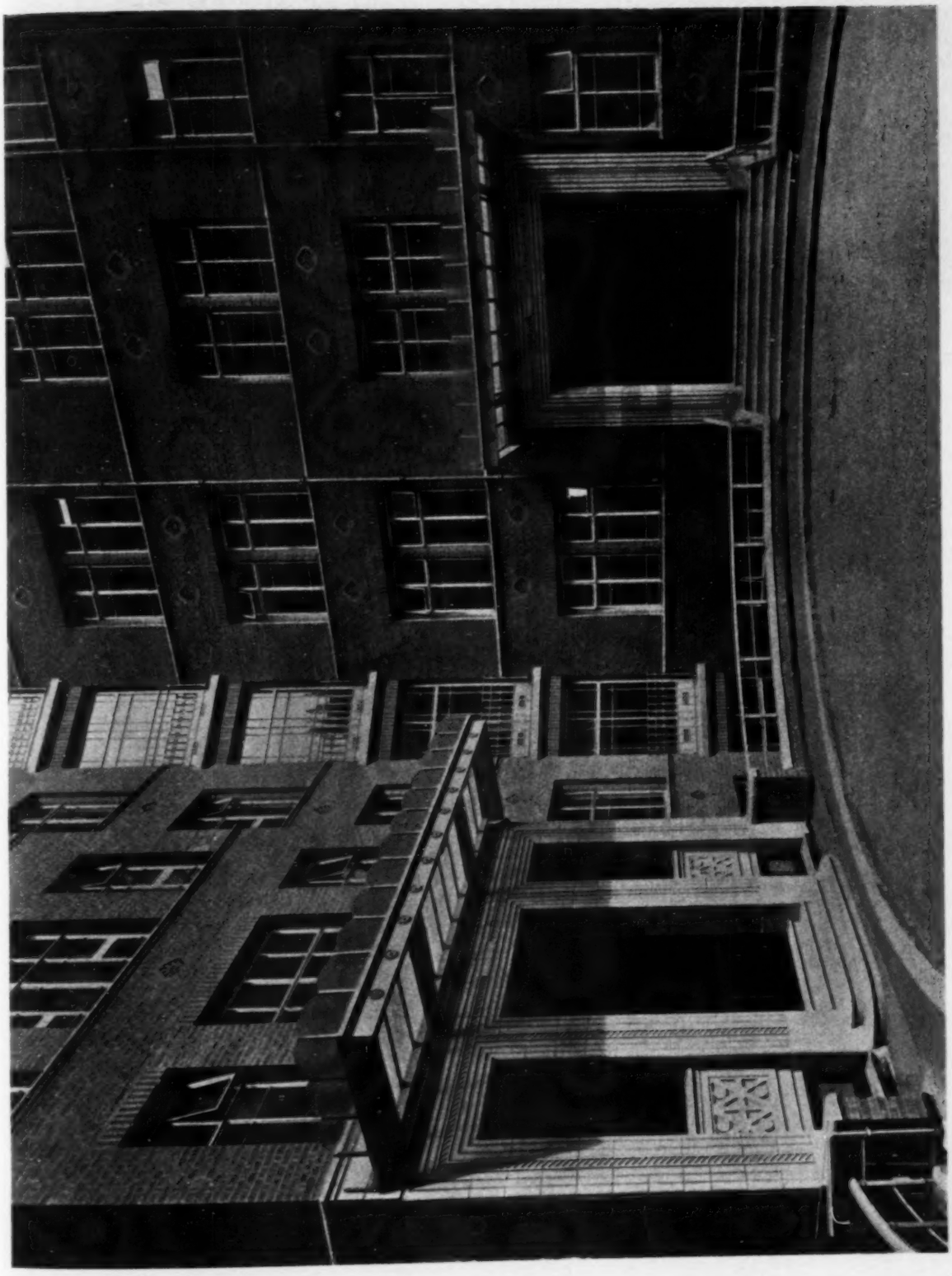




GROUND-FLOOR PLAN.

House at Pinner, Middlesex.

MR. JAMES B. DUNN, R.S.A., F.R.I.B.A., Architect.



"Oakwood Court" (Residential Flats), Holland Park, W.: Detail of Entrances.

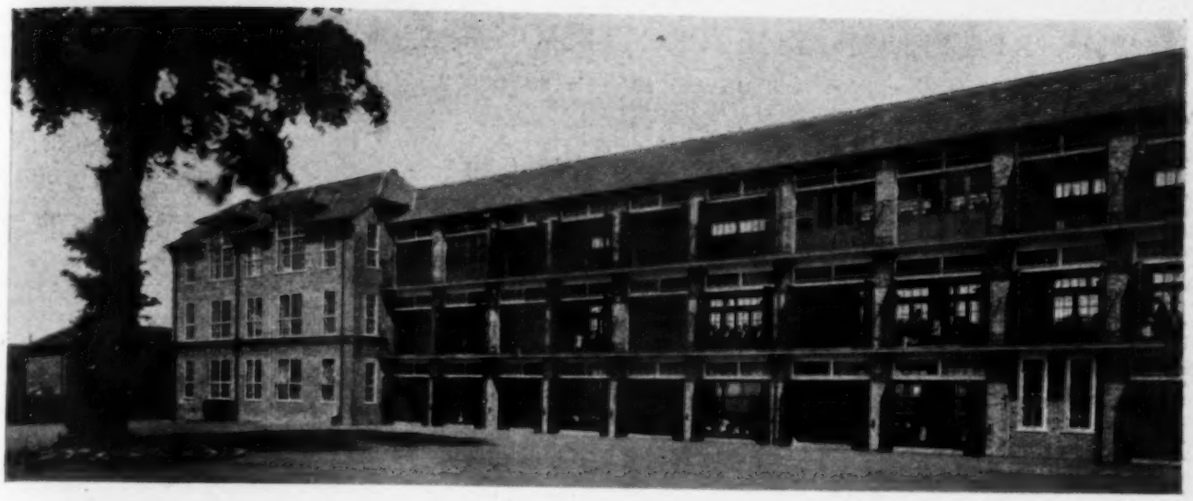
Messrs. Richardson and Gill, FF.R.I.B.A., Architects.

ENTRANCE COURTYARD.

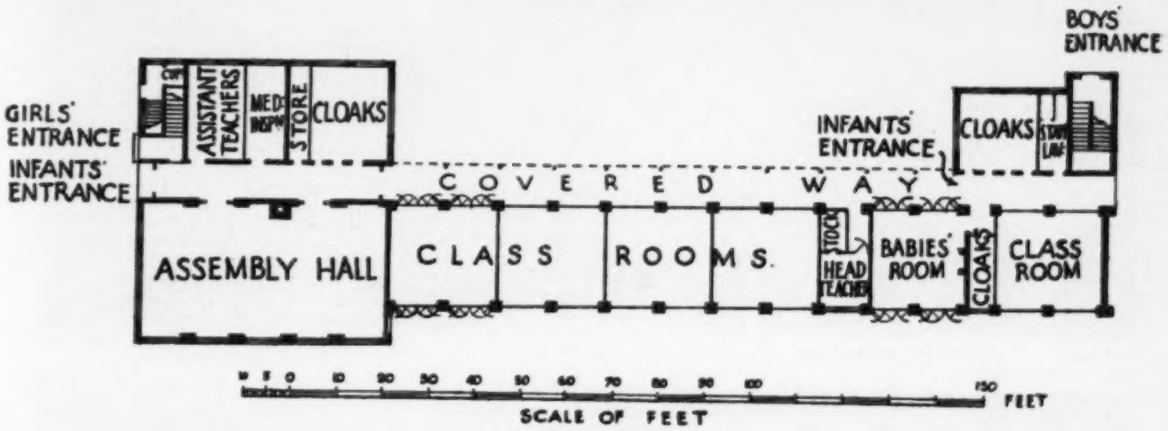
GENERAL VIEW.

"OAKWOOD COURT" (RESIDENTIAL FLATS), HOLLAND PARK, W.

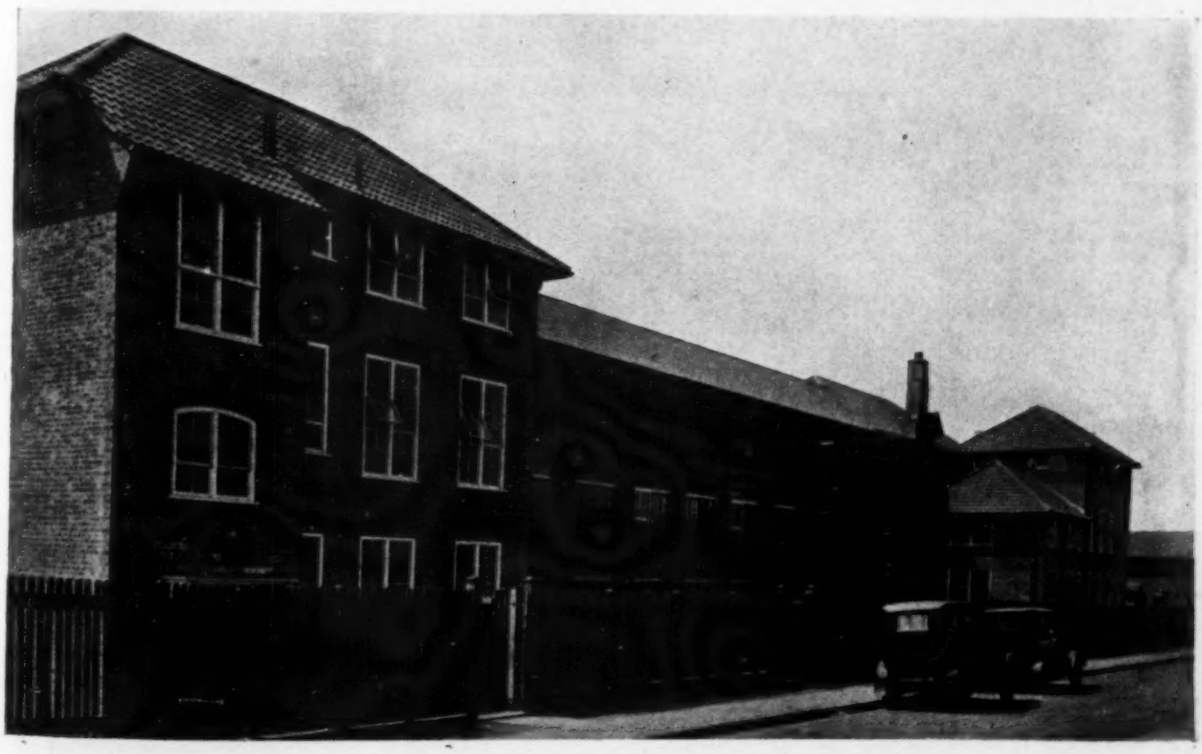
MESSRS. RICHARDSON AND GILL, FF.R.I.B.A., Architects.



South Front.



Ground-floor Plan.



North Front.

New Elementary School, Ealdham Square, Eltham.

Mr. G. Topham Forrest, F.R.I.B.A., Architect to the L.C.C.

THE STATE OF THE PROFESSION

Salaried Architects.

Apropos of the correspondence now appearing in our columns on "Government Officials and Private Work," the following "Memorandum on the State of the Profession," which has been circulated to all members of the R.I.B.A., is of special interest.

The members of the R.I.B.A. (states the memorandum) are divided broadly into two sections, viz., Private Practising Members and Salaried Members. The first section has for many years been guided in pursuance of its service to the community by an agreed policy which has for its purpose the protection of the professional interests of private practising architects. Prior to the introduction of the employment of architects on a salaried basis this policy established and maintained generally a satisfactory basis of relationship between the employing body (the public) and architects. It provided, *inter alia*, for a recognised basis of remuneration and conditions of employment and it supported successfully the status of the profession.

During the past twenty years a marked change has developed in the manner of obtaining architectural service by Government departments, county and municipal authorities, commercial and industrial undertakings, etc. These altered conditions have tended to cheapen the service of architects, to lower their status, and, in many cases, to deprive them of that recognition of the authorship of their work to which they are entitled.

MODE OF EMPLOYMENT.

The salaried members of the R.I.B.A., excluding assistants to private practising architects, are employed mainly as follows :—

(1) Official architects to Government departments, county and municipal authorities, and commercial and industrial undertakings;

(2) Members acting as assistants to the above;

(3) Members acting in the capacity of "architectural assistants" in charge of an architectural department controlled by a civil engineer, surveyor, or estate agent;

(4) Members acting as "draughtsmen" to those embraced in item (3).

With the exception of those mentioned in item (1), few members are acknowledged as, or enjoy the status of, qualified professional men in the manner that prevails in other professions. Many are remunerated on the basis of learners, or those of immature training, quite irrespective of age or experience. Salaries frequently compare unfavourably with those received by clerical and administrative officials in other avocations and engaged in service with the same employing body. Such conditions must obviously militate against the status of the profession at large.

The system of salaried employment is, with perhaps a few exceptions, a cheap service, and consequently the profession, considered as one unit, receives a lower total income than it is entitled to. There are thus two sections, private practising and salaried, each contributing a similar service to the national building programme. The former section works on a recognised basis of payment, whilst the latter has no recognised basis of payment, and consequently the salaried section is becoming increasingly popular among those employing bodies which carry out a regular building programme.

The tendency, therefore, is, in the absence of any adequate action, for the profession to develop into an uncontrolled body entirely at the mercy of those who perceive the advantage of driving a bargain with unsupported individuals who have no official guide relative to salaries and conditions of employment. The remedy for this situation is co-operation among the members of the R.I.B.A. for the protection of the profession, and in order to achieve that object the Council of the R.I.B.A. has set up a salaried members committee composed of representative salaried members and of private practising members.

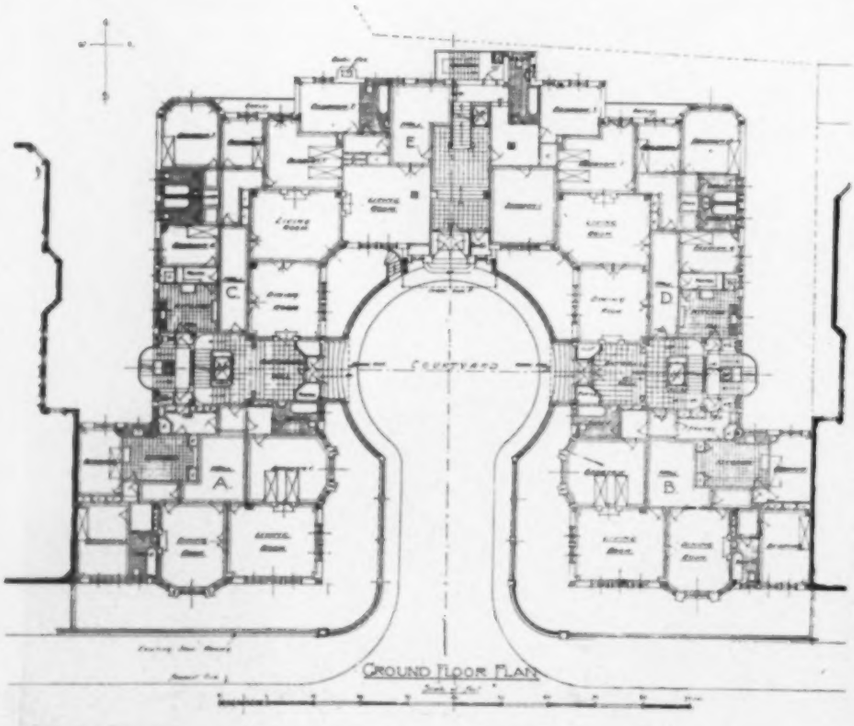
The duties of this committee embrace the following :—

(*a*) To report to the Council from time to time upon all matters affecting the welfare of the salaried members of the R.I.B.A.;

(*b*) To form an agreed policy among members of the R.I.B.A. relative to official salaried appointments;

(*c*) To investigate the conditions of employment in Great Britain and overseas, study the problems that arise, and recommend such action as may benefit all ranks of the profession.

WILLIAM H. HAMLYN,
Hon. Sec., Salaried Members Committee.



"Oakwood Court" (Residential Flats), Holland Park, W.

MESSRS. RICHARDSON AND GILL, FF.R.I.B.A., Architects.

EALDHAM SQUARE SCHOOL

THIS school has been designed as an experiment in the application of open-air principles to a three-story elementary school. The classrooms are entered from open verandahs, which take the place of the closed-in corridors usually provided. On the light and sunny side of the classrooms a series of casement doors open to a narrow balcony on the upper floors, and to the playground on the lower floor. Thus, with the exception of two small piers, the whole of two opposite sides of the classrooms can be thrown open to the air. When the casement doors are closed, ventilation can be obtained on either or both sides by opening the pivot-hung windows above the doors.

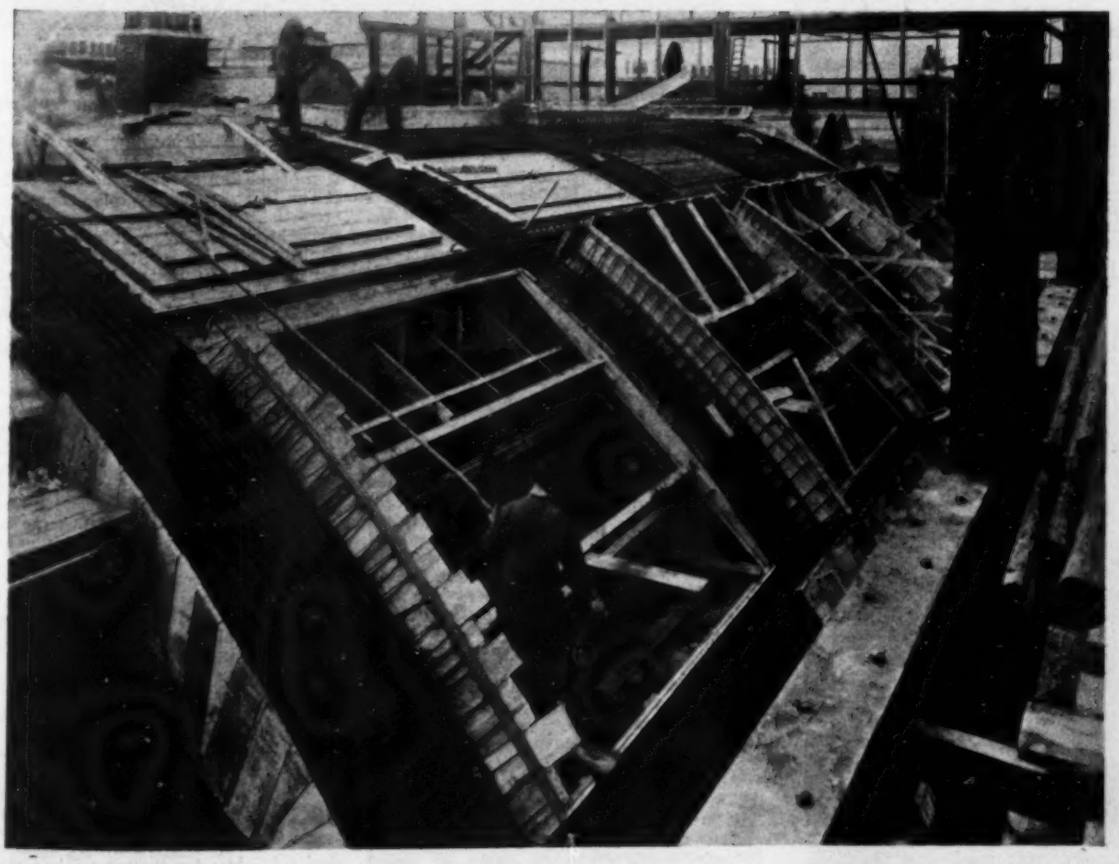
The school has three departments, namely, boys, girls, and infants, and the accommodation is as follows :—

Infants' Department on Ground Floor :—		
1 babies' room for 40	40	
5 classrooms each for 48	240	
		280
Girls' Department on First Floor :—		
3 junior classrooms each for 40 ...	120	
2 senior classrooms each for 40...	80	
1 practical room counting for 40	40	
		240
Boys' Department on Second Floor :—		
3 junior classrooms each for 40 ...	120	
2 senior classrooms each for 40...	80	
1 practical room counting for 40	40	
		240
Total ...		760

The school is planned for enlargement by two classrooms in each department, making a total of 1,016 places. A hall and cloakrooms planned to allow for future extension, head teacher's and assistant teachers' rooms and staff lavatories are provided in each department. A room for medical inspection and a room for the principal of the Evening Institute are also provided. Heating is provided by means of low-pressure hot water. The electrical mains are utilised for artificial lighting throughout and for the staff cooking stoves and coppers to supply water for cleaning purposes. A house for the accommodation of the schoolkeeper is placed near the southern boundary of the site. The bricks used for facings are mottled stocks. The roofs are covered with Bridgwater tiles. Floors to halls are laid with good blocks; the floors to the open verandahs are laid with asphalt.

The contractor for the work was Mr. F. R. Hipperson, of Broad Street Place, E.C., and the building was designed in the Architect's Department of the London County Council, under the personal supervision of Mr. G. Topham Forrest, F.R.I.B.A., Architect to the Council.

Top View of Roof.



Detail of Ferro-Concrete Barrel Roof.

Roofs of New Public Baths, etc., Westminster.

Messrs. A. W. S. and K. M. B. Cross, Architects. *See page* (867.)

OLD ST. PAUL'S—II.

By W. R. LETHABY.

DESCRIPTIONS AND EARLY HISTORY.

"This Church of St. Paul, one of the most eminent Structures of that kind in the Christian World."—*Dugdale.*

All of us, especially London dwellers, should make an effort of mind to imagine what the great mediæval Cathedral of London was like when it stood vast and high in the walled city surrounded by a hundred other churches. Some day we must reconstruct it in a pleasant yet entirely trustworthy book, so as to bring it into our hearts. We might get to know it so well as to be able to walk about its aisles in thought.

What the church must have been to the citizens who lived around it is beyond estimate. It dominated London as the Cathedrals of Amiens, Rouen, Chartres, York and Canterbury dominate those cities. The church was a great ark of community life. The spire was the main mast of the city; its shadow must have moved over the low houses as on a vast dial. The churchyard was a cathedral close full of trees. Bishop Corbet, about 1630, said of the old decaying church: "Your eyes never yet beheld such an object: it's worth your reparation, though it were but for a landmark."

From the first the Cathedral church of London impressed observers as an exceptionally magnificent and powerful work. Already, in the first half of the twelfth century, William of Malmesbury described it as pre-eminent in size and beauty. It is mentioned with admiration by many travellers. Simonis Simeonis, in the first half of the fourteenth century, says that the church was "marvellously great, and in the midst it was crowned by the most famous and incomparable campanile," which, they said, was 500 feet high. He goes on to tell of the Lady Chapel, in which Masses were celebrated with most beautiful singing.

At the end of the sixteenth century, Stow described the church as: "A minster of such worthy, strong and costly building, so pleasant and so delectable, it passed all comparison, not only of minsters within this realm, but elsewhere, as sure as travel has taught us, in other realms, either Christian or heathen" (see *Three Fifteenth-Century Chronicles*, Camden Society). Stow's account in the Survey of London is very full in many respects, but it is mainly historical, and only a small part can be quoted here. His description of the precinct is especially valuable, and he gives many details of the chapels and tombs of the interior.

"In the year 1087 this church of St. Paul was burnt with fire, and therewith the most part of the city. . . . Mauricius, the Bishop, began, therefore, the foundations of a new Church of St. Paul, a work that men of that time judged would never have been finished, it was to them so wonderful for length and breadth, and also the same was builded upon arches (or vaults) of stone, for defence of fire, which was a manner of work before that time unknown to the people of this nation, and then brought in by the French: and the stone was fetched from Caen in Normandy."

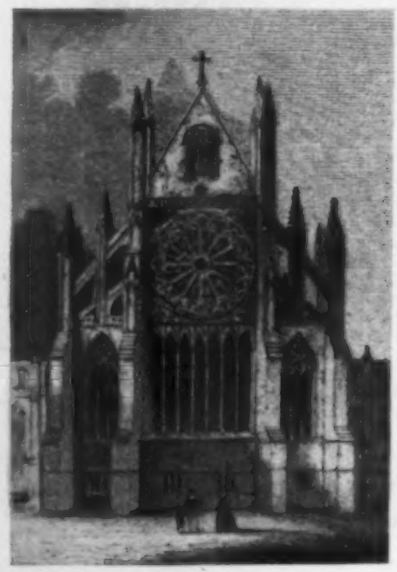
"Erkenwald, Bishop of London [was] buried in the old church about the year of Christ seven hundred, whose body was translated into the new work in the year 1140, being richly shrined above the Quire behind the high altar. Sebba, or Seba, King of the East Saxons, first buried in the old church, since removed into the new and laid in a coffin of stone on the north side without the quire. Ethelred, King of the Saxons, was likewise buried and removed. William, Norman Bishop of London in the reigns of Edward the Confessor and of William the Conqueror, deceased in 1070, and is now buried in the body of the church."

South Side: Nave and Transept Recased.

The west and south fronts of the cathedral were counted as belonging to Castle Baynard Ward, and thus they are described by Stow, apart from his main account. "In the South Churchyeard of Powles is the south side and west end of the said Church: In the which west end bee three stately gates or entries, curiously wrought of stone, namely, the middle gate, in the midst wherof is placed a massie pillar of brasse, whereunto the leaves of the said great gate are closed and fastened with lockes, boltes and barres of yron: All which notwithstanding, on the 24th December, in the yeare 1565, by a tempest of wind then rising from the west, these gates were blowne open, the barres, boltes, and lockes broken in sunder, or greatly bended. Also, on the 5 of January in the yeare 1589, by a like Tempest of wind, then in the south-west, the lesser west gate of the said church next to the Bishoppes palace was broken, both bolts, bars, and lockes, so that the same was blowen over. At either corner of this west end is also of auncient building a strong Tower of stone, made for Bell Towers, the one of them to wit, next to the pallace, is at this present to the use of the same pallace, the other towardes the south is called Lowlardes Tower, and hath been used as the Bishoppe's prison, for such as were detected for opinions in Religion, contrary to the faith of the church. (For Lowlardes Tower, reade M. Foxe.) . .

"Adjoining to this Lowlardes Tower is the parish Church of S. Gregory, appointed to the petty Canons of Powles. . . . The rest of that south side of St. Paules church with the Chapter House (a beautiful piece of worke, builded about the reigne of Edwarde the third) is now defaced by meanes of Licenses granted to Cutlers, Budget makers, and other, first to build lowe sheddes but now high Howses, which doe hide that beautifull side of the Church, save onely the toppe and south Gate.

"On the north-west side of this churchyeard is the Bishop's pallace, a large thing for receipt, wherein divers Kings have been lodged, and great householde hath been kept, as appeareth by the great Hall, which of late years, since the rebatement of bishop's livinges, hath not been furnished with household meynie and Guests, as was meant by the builders thereof, and was of olde-time used."



East End: Re-engraved, after Hollar.

Camden's *Britannia*, translated by Philemon Holland, 1610, contains a description of the church in the account of London. "The east part of this church, which seemeth to be the newer and curiously wrought, having under it a very fair arched vault, which also is St. Faith's Church, was begun of the ruins of the Palatine Castle (which I speak of) by Maurice the Bishop: about the year of our Lord 1186 when as before time it had been consumed by a woeful accidental fire: whereof William of Malmesbury writeth thus: 'The beauty thereof is so magnificent that it deserveth to be numbered in the rank of the most excellent edifices: so large is that arched vault underneath, and the church above it is of such capacity, that it may seem sufficient to receive any multitude whatsoever.' Because, therefore, Maurice carried a mind beyond all measure in this project, he betook the charge and cost of so laborious a piece of work unto those that came after. In the end, when Bishop Richard his successor had made over all his revenues belonging to the bishoprick to the building of this cathedral church, sustaining himself and his family otherwise in the meanwhile, he seemed in a manner to have done just nothing: so that he spent his whole substance hereabout and yet small effect came thereof. The west part, as also the cross aisle, are spacious, high built and goodly to be seen by reason of the huge pillars and a right beautiful arched roof of stone. Where these four parts cross one another and meet in one, there riseth up a mighty big and lofty tower, upon which stood a spire steeple covered with lead, mounting up to a wonderful height: for it was no less than five hundred and four and thirty foot high from the ground; which in the year of our Lord 1087 was set on fire with lightning and burnt,

with a great part of the City: but being rebuilt, was of late in mine own remembrance, when I was but a child, fired again with lightning, and is not yet re-edified. The measure also and proportion of this so stately building I will here put down out of an old writer, which you may if it please you read: Saint Paul's Church containeth in length six hundred and ninety foot: the breadth thereof is one hundred and thirty foot: the height of the arched roof from the ground carrieth an hundred and two foot: and the new fabric from the ground is four score and eight foot high. The stonework of the steeple from the plain ground riseth in height two hundred and three score foot: and the timber frame upon the same is two hundred and seventy-four feet high," etc.

I need hardly say a word of caution as to supposing that a tall lead spire was burnt in 1087, but it must be noted at once that the dimensions just given are, as will appear later, altogether excessive.

An account of the Cathedral given in Howel's *Londinopolis*, 1657, is headed *Of the great and glorious Temple of St. Paul's*. It begins by copying Camden, and then proceeds with some observations, which, I suppose, are his own—more or less. "The ground belonging to this great Temple, in nature of a Cœmitery or Churchyard, was of vast expansion, for it reach'd *North*, as far as *St. Nicholas* market place; *West*, almost as far as *Ludgate;* and *South*, near to *Baynard's Castle*. Now as they say *Rome was not built in a day*, no more was this great and glorious Sanctuary, but a long tract of time, and some Ages pass'd before it came to be perfectly completed, and made a perfect *Crosse*, which is the exact shape of it. . . . Within this grand Cathedral, there lieth *St. Erkenwald*, as also *Sebba*, King of the East *Saxons*, who gave over his Kingdom to serve Christ: King *Ethelred*, who was an oppressor rather than a Ruler of this Kingdom, cruel in the beginning, wretched in the middle, and shameful in his end . . . and a great many Worthies more, lodge there until the *Resurrection* . . . *Paul's* Church was full of great Monuments, the ancientiest are of King *Sibba*, and King *Ethelred*, two *Saxon Kings*. There are also two ancient Bishops of *London*, viz.: *Erkenwald*, and *William Norman*, who being of the privy Council to *William* the Conqueror, not only preserved, by his Mediation, the old privileges of London, but got them inlarged; whereupon it was the Custom of the Lord Maior and Aldermen, upon solemn dayes, when they came to *Paul's* to walk to the *Gravestone* where this Bishop lay; and Sir *Edward Barkham* caused a Table to be hung up there with Verses thereupon, called the *Monument of Gratitude*. . . .

For a stately *Cathedral Temple* and *Dome* of devotion, the time was that London did not yield to any City under the Sun in this particular; Saint *Paul's* Church being esteemed by all Nations, to be one of the eminentest, and visiblest Temple, one of the most glorious Piles of Stones under Heaven, taking all the dimensions,together, with the chearful conspicuous site thereof, being near the Center of the City, and upon rising ground: Being also founded upon *Faith's*, by having a large Church of that name truckling, as one may say, under her Chancel: Add hereunto, what a comfortable Object it was, to behold above twenty miles distance, round about, this goodly Structure, raysing itself above the rest, and serving as it were for a *Crest* to the whole City: But now this famous Fabrick, which was accounted the greatest glory of *London*, is become her greatest shame. For many Forainers (who are none of those that place inherent sanctity in senseless inanimat stones) have bin overheard to say, that *Paul's Church* in that posture she now is, is the saddest sight, and most ruthful Spectacle upon the Surface of the whole Earth; nay, some have bin heard to say, that whereas a Stable became once a *Temple* in *Palestine*, a Temple among us hath bin made a Stable; nay, they went further, not sticking to say that as *Christ* was born in a *Stable*, so *Antichrist* is like to be born in a Stable in England. The time was, that *London* was used to have a greater care of this *Temple*. . . . Such was the Reverence, that *London* shewed her Cathedral Church, not long agoe, which may be said, to look now like the hulk of a great weather-beaten ship, that hath cross'd the *Line* eight times forward and backward to the *East Indies*, and lies rotting upon the Carine; such is the condition of this stately Church, which is like to be buried shortly in her own ruines, and so become a heap of rubbish; and then how *bald London* will look, let them judge who have taken a judicious prospect of Her. Moreover, there's another Reason, that may induce *London* to prevent this; for if *Paul's* were down, She forfeits the name of a *City;* for all Lawyers concur in this opinion, that there can be no *City* without a *Cathedral Church;* 'tis but a *Village* without one, or a *Town* at most. . . .

And now, having presumed to speak so much of *London's* great Temple (than which there is not a more conspicuous Object upon Earth, except the Mount *Olympus*, which is said to bear up Heaven); and having with a true sense of sorrow set forth the sad condition thereof, my prayers are, that it would please God to put it into the hearts and move the Spirits of those worthy Patriots who are now assembled to mend all breaches in the Common-wealth to propose some way for preserving this ancient great Ornament from tumbling down."

Dugdale's volume, being wholly on the Cathedral, will not be quoted here, and only a short extract is taken from Wren's accounts of the old church. Wren, in his report on the state of the Cathedral after the fire of 1666, gives an interesting account of the shattered structure, from which I make a condensed extract:—

"The first decays of it were great for it was not well shaped for the bearing of its own vault how massy soever the walls seemed to be. It seemed to have been built out of ancient ruins the walls being of two sorts of stone; the core was ragstone cast in rough with mortar which is not a durable way of building. This accusation belongs chiefly to the west, north and south parts. The quire was of later and better work not inferior to most Gothic fabrics.

A second reason for decay was the former fire which consumed the whole roof in the reign of Q. Elizabeth. The fall of timber then upon the vault was certainly one cause of the cracks in the vault and of the spreading of the walls above 10 inches in some places. This is most manifest in the north-west aisle. Next the south-west corner one of the vast pillars with all it supported has fallen. The spreading of the pillars has carried out the walls of the aisles and reduced the circular ribs to a form which appears distorted. The tower and parts about it have suffered least for the walls in form of a cross give firm buttment and still support their vaults. The fall of timber could not break the vaults unless the concussion had force enough to make the walls give out. In the new Quire the falling vaults in spite of the buttresses have broken or dislocated them, overthrowing the north wall, and consequently the vaults of the north-east aisle have broken open the vaults of St. Faith's (though these were of very great strength) irresistible is the force of so many 1,000 tons. . . ."

Wren goes on to suggest how a temporary church might be provided in the least ruined part of the nave:—

"I would take the lesser north and south door for entrances and leaving two intercolumniations eastward, and three or four westward, make partition walls of the fallen stone. I would lay a timber roof as low as the bottoms of the upper windows with a flat fretted ceiling. The lead saved out of the burning will more than cover it. Since we cannot mend this great ruin we will not disfigure it, but it still shall have its full motives to work if possible upon this or the next ages. Within it shall have light by turning the second story of arches into windows."

Comment on the structural points mentioned must be deferred, but I should like to call attention to Wren's reverence for the old fabric shown in the last paragraph and his use of the word "motives."

Out of these general descriptions and knowledge of other cathedrals the interested reader will, I hope, form a vision of the vast church with its tall spire and the quiet precinct; also of the crowd of low houses surrounded by the ring of walls, which divided the city from the fields, and the single long bridge over the river.

Early History.

The fabric of the church was predominantly "Norman" until the end. The structure, however, never seems to have been fully completed within the Norman period. The central steeple, together with the vaults of the transepts and nave, the clerestory of the nave, and the upper part of the west front were of an "Early English" character, and it is more probable that they were first erected in this period than that they were alterations of earlier work. Many exact historical data are given by the authorities mentioned before (Part I), but they have hardly been made the basis for a clear account of the course of the works. And some misapprehensions as to their interpretation and the history of the building appear to have existed.

Matthew of Westminster writes under the year 1083: "Maurice, bishop of London, began the great church which is not finished to this day." This date for the beginning of the work was accepted by Dugdale, but other accounts which seem more probable say 1087. According to Stow, Maurice was appointed bishop in 1085, and in 1087 the Saxon church was destroyed by fire (compare Longman, p. 4). Maurice soon began a new ("Norman") cathedral on a vast scale, but the works proceeded very slowly. In 1140 the body of St. Erkenwald was translated, that is most probably put into a new shrine. Again, November 14, 1148, was celebrated as the day of the translation of St. Erkenwald, and I suppose this means that the shrine was then brought to its place in the sanctuary of the church which otherwise was incomplete. Both these dates are given in the same "Short Chronicle of St. Paul's" (Dr. Sparrow Simpson's *Documents*).

The date 1148 most probably marks the completion of the apse and eastern limb of the Norman church. At Winchester the body of St. Swithin was brought into the cathedral at a corresponding point in the progress of the building. At Westminster, also, the work was consecrated when the body of St. Edward in its splendid new shrine was placed in the incomplete church.

Building great new churches, providing splendid shrines for relics, and making much of the old saints of the land, was part of the Norman policy in England. The Conquest was represented as a crusade which had been blessed by the Pope. The victory at Hastings was in part a result of Harold's (alleged) false swearing on the relic shrine in Normandy. This is the version of the celebrated Bayeux embroidery which makes the oath the central incident of the whole drama and the death of Harold its climax. Duke William was the instrument of a great ecclesiastical revival. The Conquest of England was thus, as even a matter of policy, followed by a marked growth of relic worship. A document at St. Paul's, for which a date *c.* 1216 is suggested, has an interesting reference to the relics. It is an agreement as to the establishment of a chantry, and announces: "Anyone who shall attack this ordinance will incur the indignation of Almighty God, of St. Mary, of the Apostles Peter and Paul, and of the Saints whose relics are kept in the Church of St. Paul,

and of all the Saints and elect of God" (*Calendar*, p. 17).

William of Malmesbury says of the Normans: "They revived by their arrival the observances of religion, which were everywhere grown lifeless in England. You might see churches rise in every village and monasteries in the towns and cities, built after a manner unknown before; you might behold the country flourishing with renovated rites; so that each wealthy man accounted the day lost to him, which he had neglected to signalise by some magnificent action."

The relics of the saint would, according to custom, have been brought into the church to hallow it as soon as the apse and presbytery were complete enough to receive the shrine. The "Norman" work of the nave of St. Paul's appears from Hollar's interior view to have been of an advanced character, and it may be doubted whether the western bays at least had been more than begun in 1148. As said above, the clerestory and vaulting of nave and the west front seem not to have been erected until early in the thirteenth century. The vaulting of the transepts was similar to that of the nave. Now it is recorded that the central tower and spire were completed in 1221, and I suppose that the upper parts of the transepts and the nave, together with the west front, were being built about the same time.

In regard to this, one record has to be taken into consideration. In 1255 indulgences were offered to those who should contribute to the repair of the roof which was in a dangerous state. As Dugdale remarks: "Clear it is that either the roof of the old structure was made new, or substantially repaired about this time, it being then in a ruinous condition." Does this refer to the roof of the eastern limb, which would have been the first part of the Norman church to be covered? It is possible that the necessity to renew the roof (and vaults?) led to the rebuilding of the eastern limb of the church which was begun three year later.

ACOUSTIC CONSTRUCTION.—VII

By C. W. GLOVER, A.M.Inst.C.E., M.I.Struct.E.

Transmission of Sound.

In previous articles we have dealt with the provision of acoustical conditions under which speech and music could be heard and understood without undue strain, and have also dealt with the problems involved in the absorption and dissipation of noise for economic, psychological, pathological and æsthetic reasons.

We now come to consider the more difficult problems of insulation against sound transmission. We will deal first with the insulation against air-borne noises and aerial sound, but will proceed in subsequent articles to deal with the questions of structural vibration. Economic considerations to-day dominate the question of building construction, and the tendency is to make non-load-bearing wall panels and partitions as thin as possible consistent with the provision of adequate weathering and fire-resisting properties.

Sound insulation is becoming of increasing importance, and the tendency to thin down dividing walls greatly increases the problems of the acoustical engineer. The theory of the subject is incomplete, and attempts at sound proofing are not always attended with success, even though the underlying theoretical principles for adequate insulation are adhered to. Sound progresses with apparent facility through solid constructions by paths which it is not always easy to trace, and may be heard in positions quite remote from the source of sound. The extreme sensitivity of the ear accounts for the difficulty of completely insulating a structure against the intrusion of external sound.

If the reader will refer to the sensation scale published as Fig. 4 in article 1 of this series, he will see that the range of loudness within the limits of audibility cover an intensity of sound from one to a million-million fold.

Air-borne sounds may be transmitted to an adjoining room in three ways:—

(a) By direct passage of air-waves through openings in the wall, through ventilators, etc.

(b) By direct transmission of elastic-wave motion through the dividing medium which imparts to the air at the further side a wave motion exactly timed to that of the origin; and

(c) By vibration of the dividing medium itself as a diaphragm which by its motion re-creates sound-waves on the farther side.

Insulation.

In the majority of cases the transmission of sound through walls, floors and roofs is greatest through openings, ventilator ducts, pipes, conduits, etc. We shall deal with special methods of insulation against transmission in this manner in later articles.

The next most common method of transmission of sound is by the diaphragm action of the various parts of the structure, whilst the least common method of transmission is by the direct elastic vibration of the separating media.

Air-borne sounds are most effectively stopped by rigid walls that do not have openings for pipes or ventilators, though the construction of the wall itself, apart from the question of rigidity, has an important bearing upon the degree of insulation

Rigidity.

A partition may be bulged by pressure of sound, and if the periodicity of the sound-waves corresponds with the natural period of vibration of the partition, the transmitted sound would be *increased* in loudness by resonance.

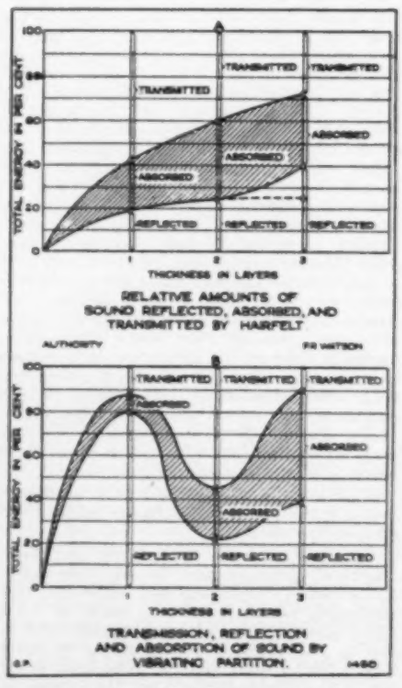


FIG. 23.

The period of vibration N of a rectangular partition fixed round all edges may be calculated from the formula—

$$N = \frac{\pi h}{4}\left(\frac{m^2}{a^2}+\frac{n^2}{b^2}\right)\sqrt{\frac{q}{3p(1-\sigma^2)}}$$

where q is the modulus of elasticity of the partition;
p the density of the partition;
σ is Poission's Ratio for the partition;
a is the length of the partition;
b the breadth;
h the thickness;
and m and n are whole numbers depending upon the mode of vibration.

A consideration of the equation shows that thick elastic partitions vibrate quickly and large massive constructions more slowly. The normal speaking voice will deflect a 4-in. stud partition of normal dimensions as much as one-hundredth of an inch in the middle, whilst the lowest notes of a powerful organ would set such a partition into a vibration which would sometimes be visible.

Percentage Insulation.

Fig. 5 shows diagrammatically the passage of sound from one medium to another. Hitherto, in dealing with the absorption of sound we have regarded a surface from which 30 per cent. of incident sound is reflected as 70 per cent. absorbent, though this is not strictly the case. The absorption proper may be as low as 10 per cent., the balance being transmitted.

An open doorway has 100 per cent. absorption speaking from the point of view of acoustics, but no absorption speaking from the point of view of sound insulation. The dual use of the term is confusing, but although it would be more correct to speak of the reflecting coefficient of materials instead of the absorption coefficient, the latter would have to be used in acoustic analyses.

Fig. 23 shows Watson's results on transmission tests carried out on various thicknesses of hair felt and on a vibrating partition. The first curve shows the relative amounts of sound reflected, absorbed and transmitted under normal circumstances when sound-waves pass from one medium through another without inducing resonance. The second curve shows the somewhat unexpected result brought about by transmission of sound through a vibrating partition. Percentage figures on sound insulation are misleading, as loudness reductions are all subtractive.

The opacity of a partition to sound is measured by its insulating value in sensation units, and if (for example) the sensation units drop in the partition were 30 and the sound level of the source were 30 sensation units, the whole of this would be insulated with 100 per cent. reduction; whereas, if the sound level of the source were 60 sensation units, the sound level on the other side would be 60 − 30 = 30 sensation units, or a reduction of only 50 per cent. The sensation level may be obtained by reading the sensation scale given in Fig. 4.

EXAMPLE.—If it is required to insulate the noise from a typing office and reduce this to the sound level of a quiet office, an insulation of 70 − 30 = 40 sensation units would be required. There would be little point in reducing the sound level further, as the noise entering the "quiet" office would be masked by the sounds therein.

It is always advisable, of course, to provide a margin for contingencies, as even sound-proof doors are not always properly closed, and there are occasional periods of quiet when any noise transmitted would be noticeable.

In the case of walls having reduction factors over 60 sensation units, conversation carried on in the ordinary tone of voice on one side would be reduced to inaudibility on the other. If there is noise in the listening room a shout on the other side of the wall would be practically unnoticeable.

THE TOWN PLANNING INSTITUTE

ROAD SURFACE DESIGN.

Dr. R. C. Maxwell took the chair at a meeting of the Town Planning Institute, held on Friday, April 25, at Caxton House, Westminster, when the subject for discussion was "Road Surface Design." Mr. G. L. Pepler, in introducing the subject, referred to previous papers and conclusions arrived at, and said the paper must be read in conjunction with the report on the "Lay-out of Cross Roads, Junctions and Corners," which was prepared by the Town Planning Institute, and circulated last year by the Ministry of Transport to all road authorities in the country. In 1925 Professor J. Brix and himself produced a comprehensive paper on "Arterial Roads," in which they dealt with present practice, describing various existing road systems, and gave examples and detailed dimensions of existing or projected roads, all over the world, divided into the following types:—Connecting large towns; by-pass; ring; connecting parts of a large town; separating industrial and residential areas; parkways; street junctions; gyratory. They made suggestions, dealing with the matter under the same sub-headings, and on the basis that arbitrary overall dimensions should not be laid down, but that the width of each type of road should depend on the various units (adapted to local circumstance) it had, or would have, to accommodate. The composite design for every part of the road being continuous with the whole, but fitting in with local zoning, and adapted to conditions of site and surroundings. With regard to types, they suggested that the width of carriageway must depend on the widths of vehicles and the number of lines of traffic to be accommodated. The unit they adopted was 9 ft., partly because of the views expressed at the 1921 discussion at the Institute; partly because it corresponded with a recommendation of the First National Conference on Street and Highway Safety, called by Mr. Hoover in U.S.A. in December, 1924; and partly because it fitted in with practice then current in Germany. He had just heard from Mr. Jay Downer, chief engineer, Westchester County Park Commission, that they were finding that the motor bus required 12 ft. In England, the actual vehicle was limited to 7 ft. 6 in., but loaded lorries occupied greater widths.

It was an interesting point for discussion as to whether the same unit of width was applicable to both two-way and one-way tracks. His impression was that the unit should not be reduced when applied to one-way streets, as overtaking traffic required, if anything, a wider margin of safety than did meeting traffic. On the other hand, the duplicate carriageway had stopping traffic on one side only, therefore a 27 ft. track allowed 20 ft. for two lines of moving traffic and 7 ft. for one line of standing vehicles, or for an occasional draw up.

With regard to footpaths, they found the average width of a standing person to be 2 ft. 3 in., and that to pass one another in comfort a margin of 8 in. was desirable. They also took umbrellas into account, and adopted a unit of 3 ft. 3 in. (minimum, 3 ft.) for pedestrians. Also, they adopted the Leeds' figure that a margin of 20 ft. was necessary on either side of a carriageway, if sewers and surface mains were to be duplicated so that disturbance of carriageway might be avoided. For grass margins a minimum of 5 ft. was suggested. For cyclists a 3 ft. 3 in. unit was also adopted, and a 4 ft. one for a person on horseback, supposing separate ways were to be provided for these forms of locomotion. On these units, and taking other considerations into account (*e.g.*, trams, which were dealt with in considerable detail), they then made a series of suggestions, in each case giving detailed reasons. Before considering these suggestions, in the light of subsequent experience, there were two general matters which it might be convenient to discuss, namely, road capacity and duplicate *versus* single carriageways.

The author quoted figures, chiefly from the experience of the United States, as to the number of vehicles per hour which can traverse a length of road at certain speeds and under varying conditions of planning and control. One object of good planning was to avoid the necessity of control, which was an expensive matter. In the United States they appeared to be adopting two-grade crossings to a considerable extent. It was probable that we might give more consideration to this device, particularly when studying contours, as when they required considerable cut and filled the two grades could often be comfortably and economically separated. At such cross-overs, a special design was necessary, so that traffic from one grade to the other might be brought smoothly into the flow, each way, without disturbing it.

The lecturer then summarised the views of various experts on road construction as follows:—

(1) *Roads Connecting Large Towns.*—(*a*) Near business centre of large town, and with trams: Separate strip for tramways, with trees on either side, 40 ft.; carriageway on either side, 27 ft.; footpath on either side, 20 ft.; total width, 134 ft. There seemed to be a large measure of agreement, that if there were to be trams, they should be laid on a separate strip in the centre of the road. This involved duplicate carriageways. Near the business centre of a large town, six lines of traffic would probably have to be accommodated, which, on balance of the opinions quoted, seemed to put the single carriageway out of count. Whether or not there were trams, a 40 ft. dividing strip seemed desirable, to be kept green, they hoped, but, if necessary, available for parking at intervals; 27 ft. for each of the twin carriageways was a compromise between 30 ft. and 24 ft. (*b*) Passing through residential areas, the same section was recommended, except that part of the footpath space should be turned into grass margin. (*c*) Where the road continued through park or agricultural reservations, the circumstances were changed: provided that adequate parking places were reserved at suitable intervals, where people could disembark for picnics, etc., or at view points, stopping traffic was practically eliminated. The following section was suggested: Central carriageway, 27 ft.; tramway strip of 15 ft. on either side; grass margins, each 12 ft.; footpaths, each 8 ft.; total, 97 ft. If the tramway strips could be eliminated, and the 10 ft. unit were adopted for the carriageway, the total would be reduced to 70 ft., only 46 ft. of which would be paved.

(2) *By-pass Road.*—The suggestion was 27 ft. carriageway; grass margin, 19 ft. wide on either side (allowing for ultimate widening of carriageway to take five lines of traffic (45 ft.); footpaths, 10 ft. each; total width, 85 ft. Trees to be planted clear of possible future widening. The majority of opinions suggested that a carriageway should not be designed to take more than four lines of traffic, so that this section might be revised (adopting 10 ft. unit) as follows: (*d*) (1) Central carriageway, 30 ft.; grass margins, each 15 ft. (would allow for widening of carriageway to 40 ft.); footpaths, each 10 ft.; total, 80 ft. He suggested that it was important that margin for subsequent widening should always be allowed for within the land reserved for the road, and that the possibility of encroaching on forecourts should not be envisaged. (*d*) (2) If duplicate carriageways were to be provided for, the following section might be considered: Central strip, 20 ft. (turning from one stream to the other should be of comparatively rare occurrence in a by-pass road, and, therefore, the radius consideration was not so important); two carriageways, each 24 ft.; grass margins, each 10 ft.; footpaths, each 10 ft.; total, 108 ft. If there were to be no building on the frontages, and, therefore, neither stopping traffic nor house services, it might be feasible to reduce each carriageway by 4 ft., and each grass side margin and footpath by 5 ft.; reducing the total width to 80 ft.

(3) *Ring Roads.*—(*e*) The suggestion for an inner ring road, encircling a main centre not more than three-quarters of a mile in diameter, was: Central carriageway for three lines of fast traffic, 27 ft.; strip on either side for trams, allowing margin for trees, 20 ft.; carriageway on each side for slow, stopping traffic, 18 ft.; grass margin, 10 ft.; footpath, 20 ft.; total, 163 ft. For an outer ring road, traffic would be less, but amenity equally important, and the following was suggested: (*f*) Central strip for tramway, 40 ft.; carriageway on each side, 18 ft.; grass margin, 10 ft.; footpath, 10 ft.; grass margin, 10 ft.; total, 136 ft. If tramways need not be provided, the central strip could be turned into a pleasaunce, and, in light of views expressed, it would seem advisable to provide 24 ft. for each carriageway, increasing total width to 148 ft. If central strip were reduced to 20 ft., this would make total width 128 ft., but, in view of allowance for turning from one stream to the other, this might be undesirable.

(4) *Principal Road—Connecting Parts of a Large Town.*—The suggestions were: (1) Through commercial or industrial area: carriageway (six lines), 54 ft.; footpaths, 20 ft.; total, 94 ft. It now seemed that 54 ft. was too wide for a carriageway, and if duplicate carriageways were substituted, the section might be: (*g*) Central strip, 40 ft.; two carriageways, each 27 ft.; footpaths, 20 ft.; total, 134 ft. Through residential area: Carriageway, 54 ft.; grass margin, 10 ft.; footpath, 10 ft.; total, 94 ft. If the duplicate system were adopted, on 10 ft. unit basis, the only change from road through commercial area would be to convert 10 ft. of each footpath to grass margin.

(5) *Separating Industrial from Residential Area.*—The proposal was:—(*h*) On industrial side: Footpath, 20 ft.; carriageway, 27 ft.; parkway, traversed longitudinally by footpaths for promenade, 100 ft.; on residence side, carriageway, 18 ft.; footpath and grass margin, 12 ft.; total width, 177 ft. If thought necessary to increase width of either or both carriageways, the park strip could be encroached upon to that slight extent.

(6) *Parkways.*—The suggestion for a simple form of parkway leading out to an important park was as follows: grass margin, 10 ft.; footpath, 10 ft.; service road, 18 ft.; grass margin, 8 ft.; strip for equestrians, 12 ft.; grass margin, 8 ft.; footpath, 12 ft.; grass margin and single tramway strip, 19 ft.; central carriageway, 36 ft.; tramway strip, 15 ft.; strip for bicyclists, 12 ft.; grass margin, 10 ft.; footpath, 12 ft.; grass margin, 10 ft.; service road, 18 ft.; footpath, 10 ft.; grass margin, 10 ft.; total width, 230 ft. If trams were not wanted, the strip on either side of central carriageway could be reduced to allow increase of width of carriageway up to 40 ft., if thought desirable, and also an addition of 2 ft. to each service road. The above proposal was made before making acquaintance with the Bronx Parkway, or envisaging a parkway many miles in length leading out into the open country.

It had to be remembered that we were planning not only for the present, but also for the future, and, therefore, much of our work must be based on estimate. If those estimates were to be worth anything, it did seem essential that road design should always form part of town planning, because, unless they had some control over side connections, unless they knew what use was to be made of frontages, unless there was some certainty as to the character of the zones which the roads would traverse, they would be designing in the dark, and it would be impossible, except by luck, to achieve economy, efficiency, or amenity.

Colonel C. H. Bressey (Chief Engineer, Ministry of Transport) said his chief grievance was that, whilst the Ministry of Transport and the local authorities had been forced in the past to spend a great deal of money on road construction, he found that town planning had lagged behind. It was not until a road was completed that town planning appeared, and by that time the frontages had changed hands and buildings had been erected. Again and again, what might have been a handsome road had been spoilt by town planners arriving on the scene too late. He hoped that would be remedied in the future. Looking at the sections prepared by Mr. Pepler, he was sorry to see so many units employed, for the Ministry of Transport, with the utmost trouble, had got the local authorities to accept a standard of the 10 ft. unit for traffic.

Mr. T. P. Frank (City Engineer, Liverpool) said road design should be controlled by town planning, and to-day, when the Government wanted a scheme, they turned to the regional and town-planning schemes, and chose the roads considered of primary importance. He thought public opinion was tending in the direction of giving the authorities the power to control buildings erected along the new roads.

Mr. Rees Jeffreys (President of the Roads Improvement Association), whilst agreeing with the 40 ft. carriageway, suggested that more attention should be given to the placing of refuges in them. It would be better, he said, to erect two refuges, each 10 ft. from the pavement. This would give the pedestrian two points of refuge, and compel drivers to pull into the kerb, and make a road an effective four-track road.

Mr. Fryer (Automobile Association) pointed out that it was almost impossible to predict what would be required of a road, and suggested, therefore, that some standard width of bend should be stabilised, with a view to future widenings.

Mr. E. Willis (Chiswick) expressed the view that the avoidance of accidents had been solved only by having duplicate roads.

Mr. F. Marsden (City Engineer, Bradford) said he believed the best road was a 40 ft. carriageway with independent tramways on each side, and with a 15 to 20 ft. pathway and grass margin.

Mr. E. Unwin gave his experience of a 40 ft. roadway in America, the whole length of which was divided into four tracks by white lines. Any driver who went outside the track was immediately arrested for dangerous driving; but at frequent intervals there were divisions in the lines so as to enable drivers to pull up.

Mr. Pepler briefly replied.

THE LONDON SOCIETY

"DECENTRALISATION."

On April 14, Dr. Raymond Unwin, F.R.I.B.A., director of the Greater London Regional Town Planning Scheme, read a paper on the subject of "Decentralisation" before the London Society at the Royal Society of Arts premises, Adelphi, W.C.

The word "decentralisation," said the lecturer, though a sufficiently good title for his talk, laid too much stress on the mere undoing of an excessive urban centralisation. It was on a better distribution, including a recentralisation in properly located units, that he wished to focus attention and effort as the most effective remedy for urban congestion. Some 40 years had passed since Lord Rosebery said: "I am haunted by the awfulness of London: by the great appalling fact of these millions cast down, as it would appear by hazard, on the banks of this noble stream, working without regard for each other—*the heedless casualty of unnumbered thousands* of men." Rather more than 40 years since Ebenezer Howard first put forward his remedy. We had continued to struggle with the problems of the still overgrowing agglomeration which Lord Rosebery called a "heedless casualty." Much progress had, indeed, been made. The conception of good planning as applicable to town development had arisen, and had spread from limited districts to wider and wider areas, until thousands of square miles were now included in some regional planning projects. Concurrently the value of Howard's remedy had been demonstrated. Letchworth was a prosperous town affording the advantages which its founder foresaw and showing by its strong financial position that Howard's remedy was as sound economically as it was helpful socially. Welwyn, the second Garden City, followed hard on the heels of Letchworth, able to profit by the experience there gained, and bid fair to complete the experimental stage.

It was inevitable that the Garden City Movement, intent on overcoming the difficulties of its experimental work of building new towns, and the town-planning movement, engrossed in the necessity of bringing the haphazard growth of existing towns under the guidance and control of planning, should for a time travel separately along parallel lines. It was unfortunate for both that the separate tracks had been too long followed in this country; and it was high time that both movements should fully recognise that they were members one of another; that each had a necessary contribution to make to the better distribution of the people, their industry and their play, which was the basis of all sound regional planning. In the international field, the fact that town planners and devotees of garden cities represented but different phases of the large whole of regional planning was spontaneously recognised when they met in Congress at Gothenburg, in Sweden, in 1923, from which meeting the united International Federation sprang. In this country progress would be speeded up when the Garden City Movement fully recognised that in regional planning it must find its proper place and its greatest opportunities; and when equally the regional planners realised that the garden city, and its near relative the satellite town, afforded by far the best method for securing that better distribution at which they aimed. Howard realised that the experimental period was necessary, but he foresaw also the need to emerge from it. "The time for the complete reconstruction of London," he wrote, ". . . has not yet come." "A simpler problem must first be solved." "One small garden city must be built as a working model, and then a group of cities. . . ." "These tasks done, and done well, the reconstruction of London must inevitably follow." This reconstruction was now overdue. The two movements must recognise their mutual relation and dependence, that we might have the accession of driving force which their cordial co-operation could give.

The position was more than ripe for this advance. On the one hand we found a multitude of people moving out from London each year to settle beyond the county boundary in the Greater London region. On the other hand there was a growing outcry that these people were ruining by their sporadic patches of bungalows or other buildings the amenities over large parts of the Region. During the last 17 years an average of 36,000 people, the full population of one garden city or small towns had so migrated every year. If this exodus had been guided into 17 well-planned self-contained satellite towns, instead of being scattered over the region in haphazard outbreaks, what an extent of rural amenity would have been preserved! And why should this exodus not be so planned? It was simply applying to the expansion of the town those principles of forethought and order which transferred a crowd into a queue, a scramble at a refreshment bar into a comfortable meal. The scale was larger, but the principles are the same. *The bigger the crowd at the buffet, the fewer are comfortably fed!* Letchworth and Welwyn might be taken as examples. Financially Letchworth had had time to prove its soundness. It was paying its full current dividend, and annual instalments of that held over for the earlier years. Its assets showed a balance of over £285,000 above the liabilities. In health both stood supreme. Both Letchworth and Welwyn were industrial towns. They had succeeded because they offered advantages for industry. The industrial area was laid out for convenience, and there was space for expansion. Another important point was that we had estimated that London should aim at having seven acres of playing fields of all kinds for every 1,000 of the population. Letchworth was able to use twice that area already, because its inhabitants lived and worked and played within a reasonable distance. In other words, their life was reasonably localised. In London we were building multitudes of houses in one place, masses of factories in another, and spent a large part of our lives going from one such spot to another. Slough had been crying out for a garden city or satellite town to be built ever since the fine and efficient industrial site was developed there.

The factories were to a large extent decentralising themselves, in spite of house shortage, said the lecturer. The Chief Inspector of Factories had reported that during the last five years 90,000 additional factory workers were engaged between Acton and Slough. Compare the life of one of these workers living in one or two rooms in a tenement in Southwark or Shoreditch, up early to catch a crowded train, home late after another long journey, with that of a worker at Welwyn or Letchworth, within easy walking or cycling distance of his work, his sport or his amusement. The difference was mainly due to want of planning, want of co-ordination of industry and housing, *want of properly designing an ordered pattern of urban development on a secure background of open space.* We were not short of space. If London were spread out on the basis of ten houses per acre, and four persons per dwelling, the Region could absorb the rest of the population of England and Wales and yet have some spare space. For on that basis the London Region would hold 45,000,000 people. *It was not the land we used but the space we spoilt by sprawling about which caused the troubles.* There was ample space to continue growing for hundreds of years.

What we needed was to group the industries in self-contained units arranged for convenience and efficiency, and each unit provided with a well-equipped residential town having its centres of retail business, education, recreation and social intercourse, its playing fields, and all that went to make a good life. Some industries depended so much on their local distributive market that they would choose the satellites just outside the fringe. Some depended more on space, clear atmosphere, access to main lines or main highways for transport. They would choose satellites farther out, more like Welwyn and Letchworth. There was place for both. The essential need was to plan the region, allocate the areas for building development; within these allocate ample areas for industrial development, for business and for dwellings, being careful to preserve ample space for open-air life and games about each unit, ample unspoiled country for those who loved it. How many these were was indicated by the efforts which all classes were making to get away from the town and plant themselves in some new spot where they might enjoy it until they and their neighbours, unwittingly and for want of guidance, spoil it.

An Architect's Estate.

Mr. Frank Thomas Baggallay, F.R.I.B.A., of Ridgway-place, Wimbledon, S.W., left £3,451 (net personalty £3,375).

SHEFFIELD SOCIETY OF ARCHITECTS

The 42nd annual general meeting of the Sheffield, South Yorkshire and District Society of Architects and Surveyors was held in the general lecture room at the University, Sheffield, on April 10, the President (Mr. C. M. Hadfield, F.R.I.B.A.) in the chair.

The following resolution was passed unanimously :—

"That a junior section of the Society be formed in conjunction with a Students' Society of the Department of Architecture, University of Sheffield, for the purpose of the study of architectural design and construction."

It was decided that a committee consisting of Mr. W. G. Buck (President), Mr. H. B. S. Gibbs, Mr. S. Welsh, Mr. E. A. Ashburner, and one student from the Department of Architecture, with power to add, should act together and make the necessary arrangements for starting such a junior society.

A vote of thanks to the retiring President (Mr. C. M. Hadfield) was proposed by Mr. W. G. Buck, and seconded by Mr. J. M. Jenkinson, to which Mr. Hadfield, in reply, said most of the big professional questions which seemed—two years ago—to be nearing a solution, were still in the "lap of the Gods." The Registration Bill had still to receive the assent of Parliament, but they could at least claim, as a result of their efforts, that most of those who opposed it on honourable and conscientious grounds had now declared themselves satisfied. The new Charter of the R.I.B.A., to enable them to meet the difficulties of those who, through no fault of their own, had not been able to take out formal qualifications, had still to receive the assent of the Privy Council. The unfortunate misunderstanding with the National Builders' Federation in their attempt to enforce a new form of contract was still dragging on, and he thought they must recognise that this was due to the changed condition of the building industry which tended to alter the old friendly and informal relations between architects and builders to which they had been accustomed in the past. The old type of craftsman-builder, whose natural sympathies and outlook were in harmony with their own, was no longer the only factor in the industry. The new type of large commercial contractor whose slogan was finance and organisation, was not in the same sense their natural ally, and the official opposition offered to registration and that contract form question and other matters, showed very plainly that by this type of business man the purpose of architectural control and collaboration was not as yet understood and appreciated. Last of all there was their own position as a professional body in Sheffield which they could hardly claim to have greatly improved in the last two years. As their representative in London he had been brought into close contact with the representative architects from most important provincial centres, and had it painfully brought home to him that there was no parallel elsewhere to the conditions under which architects had lived in Sheffield for the last 20 years. In these days no one doubted the importance to a cultured community of encouraging high standards of architecture, and he could not think that the practically 100 per cent. monopoly of public work of every description by a public authority, ever growing in extent and power, and ever extending its sphere of activity, was any more in the interests of a city and of the art of architecture than in their own purely personal interests. If this state of things was to be altered they would have to bestir themselves. There was only one remedy, and that was co-operation, mutual loyalty and support, and subordination of selfish ends to the general good.

The election of officers for session 1930-31 resulted as follows :—

President, Mr. W. G. Buck, F.R.I.B.A.; vice-president, Mr. J. E. Lancashire, Lic. R.I.B.A.; hon. treasurer, Mr. J. R. Wigfull, F.R.I.B.A.; hon. secretary, Mr. H. B. S. Gibbs, A.R.I.B.A.

Fellows.—Messrs. R. Cawkwell, A.R.I.B.A., J. M. Jenkinson, A.R.I.B.A., H. I. Potter, A.R.I.B.A., J. A. Teather, Lic.R.I.B.A., J. C. P. Toothill, A.R.I.B.A., S. Welsh, M.A., B.Arch., A.R.I.B.A.

Associates.—Messrs. H. W. Inott, Lic. R.I.B.A., A. M. Lusby, A.R.I.B.A., F. H. Wrench, Lic.R.I.B.A.

Provincial Members.—Messrs. C. F. Moxon, Barnsley, F. H. Bromhead, A.R.I.B.A., Chesterfield, E. H. Walker, F.R.I.B.A., Doncaster, Lt.-Col. J. E. Knight, Rotherham.

Mosaic Wall Panel from the Temple of Isis, Pompeii (now in Naples Museum).
From a Water-colour Drawing by Mr. William Davidson, F.R.I.B.A.

This panel, from the Temple of Isis, Pompeii, and now in Naples Museum, measures about 6 ft. 6 in. by 2 ft. 6 in., and the cubes average about four to the square inch. The marble margin is of the same type as Brescia Sanguine (blood-red, orange and cream). The guilloche border is cream and pale blue on a black ground. The scroll inner border is yellow ochre on a green ground. The candelabra-like centre ornament is in cream, yellow and sienna on a dark ultramarine ground. The balance and composition of the charming inset panel is a gem of this period, and represents the figure of a nude boy throwing a javelin at a wild goat. The background is Pompeiian red, with a dull green strip for the ground on which the figures are set. The boy and the goat are done in cubes of varying shades of cinnamon and grey. As a piece of decorative mosaic work this panel would be difficult to surpass, and might be used today, as it stands, for the ingo of a doorway to a butcher's shop.

WESTMINSTER PUBLIC BATHS

New buildings incorporating the Westminster Public Baths, Maternity and Child Welfare Centre, Rates Office and Highways Depôt are now in course of erection at Soho for the Westminster City Council, and we give this week three illustrations showing the present condition of the roofs, which are of unusual constructional interest.

On p. 874 is a view from north-east to south-west of the roofs over the first- and second-class swimming baths. The roof nearest the camera is that over the second-class bath, length 70 ft. and width 41 ft. 8 in. The bath itself will be 60 ft. by 30 ft. This roof is of the ordinary steel construction

The semi-circular or barrel roof furthest away from the camera is that over the first-class swimming bath. The roof covers a space of 112 ft. by 68 ft. The bath measures 100 ft. by 35 ft. The roof, side walls, piers, galleries and the bath itself are all of ferro-concrete construction designed on the Mouchel-Hennebique principle. The view shows the temporary timber sheeting and tubular scaffolding supports, together with the steel reinforcement of the arch ribs, all in process of construction. On the right-hand side and at the distant end of the barrel roof the steel superstructure of the buildings surrounding the swimming bath will be observed. In these buildings will be situated mainly the slipper-bath divided into first- and second-class for men and for women.

The top view on p. 861 is similar to the one below, only it is looking in the reverse direction, i.e., from south-west to north-east. The roof nearest the camera is that of the ferro-concrete barrel roof of 68 ft. span over the first-class swimming bath, and farthest away from the camera will be seen the superstructure in which the Highways Depôt will be housed, together with the public laundry, mangling-room and apartments for resident staff. On the left of the photograph is the superstructure of the block for the medical officer and the men's first-class and second-class slipper-bath. Along the top of the barrel roof are the openings being formed for the lantern lights to give ventilation and light to the first-class swimming bath below.

The lower illustration on page 861 is a close-up view of the ferro-concrete barrel roof of 68 ft. span over the first-class swimming bath. It is taken from the level of the first floor of the block on the north-west side of the site, the steel stanchions forming which can be seen on the right-hand side of the photograph. This view more clearly shows the lay light openings (with a workman standing in one of them), the panelled soffits timbered ready for the deposit of concrete and the arched ribs and longitudinal beams.

The arched ribs are eight in number, spaced at intervals of 16 ft., with their foundations rising from the basement level. The reinforcement for the rib nearest the camera consists of 16 round steel bars of 1¼ in. diameter, with 5-16th in. links spaced at intervals of 6 in. The overall size of the rib after the concrete has been deposited is 35 in. wide by 27 in. deep, and the weight is about 2 tons per foot run. In this view nearly all the moulds, sheeting and timbering to arch ribs, beams and panels are practically ready for a commencement to be made with the concrete.

Messrs. Bovis, Ltd., are the contractors, Messrs. L. G. Mouchel and Partners are the consultants for the ferro-concrete work, Messrs. Drew-Bear, Perks & Co., Ltd., are the constructional steel contractors, and Messrs. A. W. S. & K. M. B. Cross, of 45 and 46, New Bond-street, are the architects.

Proposed Theatre, Saltcoats.

Mr. John Fairweather, F.R.I.B.A., 82, Trongate, Glasgow, is architect for a new theatre at the corner of Windmill and Hamilton-streets.

CINEMA BUILDING ACOUSTICS

A PAPER on "Building Acoustics in Relation to Talking Pictures" was read by Mr. N Fleming, M.A. (Physics Department, National Physical Laboratory, Teddington), before the Society of Motion Picture Engineers. During the last few years, said the lecturer, very great advances had been made in the recording and artificial reproduction of speech and music. One result of the activities thus promoted by wireless broadcasting, by the gramophone, and by talking pictures had been to stimulate a much wider interest in the acoustic properties of buildings. The acoustic defects which were met with in buildings were not in themselves, however, a product of these recent activities. Two thousand years ago, indeed, the ancient Greeks encountered acoustic difficulties in their theatres, and adopted various expedients in their endeavours to overcome them. We were all, moreover, quite familiar —though it might be unconsciously—with some of the commoner acoustic properties of enclosed spaces. Anyone, for instance, taken blindfold first into a large church and then into a padded cell would have no difficulty in deciding which he was in purely from the difference in their acoustics. The incentive to sing in one's bath was due largely to the acoustic properties of the room, which enabled such resounding notes to be produced with so little effort, and vocal feats to be achieved such as one might be quite incapable of reproducing elsewhere. In connection with talking pictures, questions of building acoustics arose both in the studio, where the sound was recorded, and in the theatres in which it was reproduced. Some special problems were presented, but the general principles to be followed were those already well established. Their application to the recording and artificial reproduction of sound, in particular, together with some of the special problems which arose, might, however, be considered more fully.

The provision of adequate loudness for all members of the audience and the avoidance of echoes were problems, said the lecturer, whose solution lay mainly in the choice of a suitable size and shape for the auditorium. It was essential, therefore, that consideration should be given to acoustic questions during the period in which the building was being designed, and that it should not be deferred until the building was erected, or remedial measures might then prove to be comparatively costly, and perhaps unsightly. In this country the National Physical Laboratory, in conjunction with the Building Research Station, was prepared to investigate experimentally the acoustics of proposed, or of existing, buildings, to report on the conditions to be expected, and to make any recommendations necessary for their improvement. The general progress of the direct sound and its reflections in proposed or existing buildings might be examined by several methods. To a large extent sound was reflected in the same manner as light, and the progress of sound waves in suitable sections of the building might be traced out by geometrical methods, utilising the laws of optical reflection. Since, however, the wave lengths of audible sounds were often comparable with the size of the reflecting surfaces encountered, sound might spread considerably outside the limits imposed by optical laws. Sabine, in 1913, utilising the technique developed by previous workers, studied the reflecting characteristics of buildings by photographing the progress of a sound pulse within suitable model sections. Apparatus for this purpose had now been in use for some years at the National Physical Laboratory.

In the open air the voice of an average speaker would carry with sufficient loudness only to those members of an audience within a distance of about 50 ft. In an auditorium, therefore, it should be arranged that the more distant members of the audience should receive, in addition to the direct sound, reflected sound from suitably disposed surfaces. The paths traversed by the reflected sound and by the direct sound should be as nearly equal as possible, and, in any case, should not differ by more than 80 ft., or the reflected sound would be separately perceptible as an echo. Usually the ceiling was the most suitable surface to be used for this purpose. In general it should not, therefore, be more than about 40 ft. high, or the reflected sound would constitute an echo at the front of the hall. It should be shaped so as to distribute the sound equally over the rear part of the hall, and that was, it should be flat or slightly concave, with a radius of curvature not less than about twice its height. If the ceiling had too great a curvature, focussing effects might occur, the reflected sound being concentrated on to some members of the audience, to the detriment of the remainder.

With talking pictures, the disadvantages of a high ceiling might to some extent be mitigated by a suitable choice of the position of the sound projector. This should be placed as high as was consistent with retaining the illusion that the sound came from the screen. By so doing the path difference between sound reacning the audience directly and that reflected from the ceiling was reduced, and a ceiling of such a height as to produce an echo when the speaker was at the level of the stage might be rendered comparatively harmless by raising the source of sound some 15 to 20 ft. In the cinema adequate loudness for the most distant members of the audience could, of course, be obtained simply by reproducing the sound at a sufficiently high level of intensity. In general, however, the reproduction would then be far too loud for the nearer portions of the audience. This should be avoided, for, apart altogether from the unnatural effect simply due to accentuated loudness, the physical characteristics of the ear might result in actual frequency distortion. This was due to the fact that, if, in a series of pure notes covering the range of frequencies present in speech, and all appearing equally loud to the ear, each note was amplified to the same extent, the resulting series would no longer give sensations of equal loudness. The notes at the lower end of the series would now appear to be louder than those at the higher end. Consequently, if speech was reproduced at too high a volume level, the lower frequencies present were accentuated, and the well-known "booming" effect occurred.

It was thus of paramount importance in designing an auditorium for use in connection with the artificial reproduction of speech and music, to pay particular attention to the question of uniform distribution of loudness. The high position of the loud-speaker, advocated in connection with the avoidance of echo from a high ceiling, was also advantageous in that the instrumenet was removed to a greater distance from the nearer members of the audience, and so helped towards greater uniformity of volume level. The rear portion of the ceiling had already been mentioned as a useful reflecting surface, which directed additional sound to the farther members of the audience. The front portion of the ceiling and of the side walls might well be suitably sloped so as to direct reflected sound towards the rear of the auditorium, rather than, as would normally be the case, towards the nearer part of the audience, for whom the direct sound was in itself adequate. This might be accomplished by the provision of a very deep proscenium arch. The slope and curvature of the proscenium arch had been chosen so as to direct sound to the rear half of the balcony.

With artificially reproduced speech or music there was always present a slight background of noise, arising in the processes of recording and reproduction, so that the elimination of other forms of noise became of greater importance. To avoid the accidental introduction of noise into the sound record, the studio should be efficiently isolated acoustically, and the deliberate introduction of noise, whether in the form of a background of music or of the sounds normally associated with the scene, should be done with extreme care. If some compromise was necessary, it would be better to sacrifice "atmosphere" to intelligibility rather than the reverse. In the auditorium also the production of noise should be avoided, and noises originating outside should be excluded. In the first category, perhaps, the most important noise was that arising from the coming and going of members of the audience. To reduce this gangways must be heavily carpeted, and entrance and exit doors should be silent in operation, while the corridors leading to such doors should also have some form of covering for deadening the sound of footsteps. The ventilating system used must be as silent as possible in itself, and must not provide a path for the introduction of sounds originating outside. As regarded the exclusion of external noise, the structure of the building necessarily played an important part. In general, a heavy structure was more efficient in this respect than a light one, but, in addition, much might be accomplished by a suitable lay-out of the building. Entrance and exit doors, for instance, as well as being of heavy construction and tightly fitting, should be so arranged that those which were to be used during the performance did not open directly on to noisy situations, such as the street, the entrance foyer, or a refreshment room

In conclusion, said the lecturer, the acoustic conditions of the studio for the recording of talking pictures, and of the auditorium in which they were to be reproduced, should conform, in general, to the accepted standards for ordinary buildings. The combined effect of reverberation in the sound record and in the auditorium made it desirable to arrange both for the reverberation period of the auditorium to be somewhat less than that normally preferred, and for the period of the recording studio to be slightly lower than that usually associated with the scene recorded. Extraneous noise was of increased importance, and should be avoided both in the studio and in the auditorium.

Research Scholarships in Technology.

The Governing Body of Manchester Municipal College of Technology (University of Manchester) offers a limited number of Research Scholarships in Technology. The value of the scholarship will not exceed £100. These will be tenable during the session 1930-31 in the College. Research may be undertaken in any of the following departments:—Mechanical Engineering, Electrical Engineering, Municipal Engineering, Applied Chemistry, Textile Industries, Photographic Technology, Printing, Industrial Administration. Applications must be received on or before June 27. Forms of application and all information may be obtained by written application to the Registrar of the College.

Building Control at Malvern.

In order to meet the objections of the Commons, Open Spaces, and Footpaths Preservation Society and of the Council for the Preservation of Rural England, the promoters of the Malvern Hills Bill have undertaken to insert in the measure an amendment submitted by Sir Lawrence Chubb, which will remove the criticism aroused by the provision in the Bill under which power is sought to authorise the Conservators to issue licences for the erection of refreshment stalls. The accepted amendment provides that before any licences for stalls are issued the Conservators must approve the sites, plans, elevations, and materials of the structures, and that before doing so they must consult the advisory panel set up by the C.P.R.E. in conjunction with the Royal Institute of British Architects. The amendment further provides that no advertisements of any kind visible from without shall be exhibited on or about any refreshment stall in respect of which a licence may be granted.

ARCHITECTS' & BUILDERS' INQUIRY BUREAU

May we appeal to our correspondents to submit their queries on paper of a size easily filed, and written as legibly as possible, or, better still, in typewriting!—ED. *We are glad to give questions and answers, but cannot accept responsibility for contributed replies, especially on legal matters.*

P.C. Amount.

SIR,—I am now agreeing a final account for a house erected under the R.I.B.A. contract, in which the following items appear in the specification :—

"Provide the sum of £50 for iron standard metal casements to be fixed by a firm to be selected.

"Glaze with ½-in. steel-cored cames and Flemish glass p.c. 2s. 3d. per ft. super, all other glazing to be clear glass at 2s. per ft. super."

(1) The point arises does the p.c. amount provide for the fixing of these casements, or should this be at the expense of the contractor?

(2) Does this imply at 2s. 3d. and 2s. per ft. super respectively glazed complete, or should the p.c. amount provide the leadlight only?

B. O. N.

[(1) As the clause reads, the provision of £50 would appear to include fixing by the firm selected. Certainly the contractor cannot be called upon to fix the casements, and if he has done so he must be paid for doing so.

(2) Yes, at 2s. 3d. per ft. super., glazed complete. The p.c. amount is not for the leadlight only. If the architect has approved a greater p.c. than 2s. 3d. he must allow the extra amount to the contractor.—ED.]

Habitable Houses.

[REPLIES TO "INQUIRER," APRIL 25.]

SIR,—The answer to this question would appear to be, "What will satisfy the local authority?" See them and ask what they consider wrong and at variance with the by-laws. Then put your inquiry into this bureau again and someone will be pleased to help.

CLERK OF WORKS.

SIR,—Your correspondent may take it that no local authority whose officers know their business would condemn a house as not habitable unless it had arrived at a state of decay beyond practicable repair. A house which admits the weather badly cannot, however, be classed as habitable until measures have been taken to exclude the weather. Recent legal judgments suggest that the conditions experienced during the last nine months offer few precedents.

JUDGMENT.

SIR,—A habitable house is one which in the opinion of the medical officer of health for the district is not in a state so dangerous or injurious to health as to be unfit for human habitation (see section 30 of the Housing of the Working Classes Act, 1890). It should be noted that the premises must be in a state dangerous or injurious to health. Mere want of repair will not necessarily satisfy this condition. Hence it follows that a local authority could not, it is thought, issue a closing order in the circumstances described by "Inquirer."

HOUSE.

Bleaching Oak.

[REPLY TO "ARCHITECTS," APRIL 25.]

SIR,—The application of lime putty, left on for about a week and then washed off, will get the silver grey effect that is generally desired for oak. This may, however, be too wet a process for the purposes of your correspondents.

TREATMENT.

Conversion of Earth Closets.

SIR,—May I thank "Conversion" for his helpful answer? "J. R. T." is harsh and apparently not acquainted with conditions in many rural districts—this one in particular, where the general practice, which meets with the Council's approval, is for three or more houses to share one closet, and that some distance from the houses. Under such conditions one can hardly expect a landlord with little capital to create, to the ideals of "J. R. T.," a standard of hygiene considered unnecessary if he is not compelled to do so. Further, a grant was made in similar circumstances, on the ground that the improvement will cut out cost of night soil removal, and not rob the ratepayer.

F. M. H.

Whitewash.

SIR,—Will you please tell me the best mixture for whitewashing old houses? I notice that some walls remain white and fresh much longer than others, and I presume this must be owing to some ingredient of which I am not aware.

H. S.

BOOK REVIEWS

The Powers of the Architect. By W. T. CRESWELL, of Gray's Inn and the South-Eastern circuit, Barrister-at-Law, Hon. A.R.I.B.A., Associate (late Fellow) of the Surveyors' Institution, etc. With a Foreword by H. D. SEARLES-WOOD, F.R.I.B.A., P.P.I.Arb., P.P.I.Struct.E. (London : *The Builder*, Ltd., Catherine-street and York-street, Aldwych, W.C.2.) Price 4s. By post 4s. 4d.

It is sometimes said of a man that he does not know his own strength. Whether it is to his credit or otherwise, or whether his associates may breathe a sigh of relief at his ignorance or deplore it, will depend very largely upon circumstances. But it is the business of all men to know both their own strength and their own powers, both physically and in their way of business, whatever value general opinion may set upon such knowledge.

Particularly is this the case with the architect, who holds, in his practice, a position quite unique among professional careers. He has to be an artist, a technician, something of a lawyer, something of a judge with almost arbitrary powers. His powers for good or evil are of the widest; and, whereas it is a great pity that few of the general public understand a tithe of those powers, and nothing of their limits, the pity is tenfold that very few architects themselves know precisely how far they may go, or how far they ought to go.

We may excuse them in the multiplicity of their duties that they find little time to delve into works of legal reference whereby to know themselves. We shall no longer excuse them now that there is a small, concise work of reference at their disposal, in which Mr. Creswell has covered the whole field in language which other than lawyers may understand.

Building Construction. Types of Construction, Materials and Cost Estimating. By WHITNEY CLARK HUNTINGTON, C.E. New York : John Wiley & Sons, Inc. (London : Chapman & Hall, Ltd. 1929.) Price 30s. net.

Those who anticipate a career closely connected with building in America will find this a complete and well-ordered standard work upon its subject. The remainder will find many useful pieces of information from which we in this country may learn modern method from a younger nation, but will probably invest in a text-book more directly applicable to English ways of working. Steel and concrete construction seem very similar to our own, but standard sizes and costs show frequent variation. To the English student the work will stimulate a lively if detached interest. In its own country it will doubtless find a wide circulation and provide many uses for student and practitioner.

BUILDING PRACTICE

By W. T. CRESWELL, Barrister-at-Law, Hon. A.R.I.B.A., Associate (late Fellow) Surveyors' Institution, etc.

XIV.—INSURANCE AND MAINTENANCE CLAUSES.

Recently, building contracts have followed the method of providing that the contractor shall insure for a defined period the buildings he contracts to erect; for instance, up to the time the works shall be delivered up. Presumably, this time would be the date of completion, or when he gives possession to the employer of the completed works.

But (and here arises the difficulty) most building contracts include a maintenance clause, even where there is no such provision for insurance; and the period of the maintenance clause usually extends beyond the actual date of completion. Therefore the question arises, when it does so extend, as to what is, in fact, the liability of the contractor should the building works be totally or partially destroyed by fire during the maintenance period, he not having renewed the policy of insurance so as to cover the maintenance period; there being no definite requirement of the contract that he should renew it.

The answer to this question is not easy to give. So much depends on how the maintenance clause can be construed or interpreted. And in reading the clause it must be remembered that the insurance, completion, and maintenance clauses must all be construed *together*.

Some maintenance clauses are more comprehensive than others. For instance, there may be (1) a general condition which requires the contractor to keep the works in repair during a fixed period after completion or after the final certificate is given, or (2) that the contractor will rectify defects which are discovered within a fixed period, or (3) to maintain and uphold the structure, or (4) a condition that the contractor is to be liable for breach of contract for defective work appearing *at any time*—the latter, it is true, is a somewhat unusual condition, but has been made on occasion.

Sometimes more than one of these are contained in the same contract.

The Defects and Repair Clauses.

Now it appears that when the clause is purely a defects clause, the contractor can only be held responsible for defects due to bad construction or use of improper materials and for deviations from the architect's instructions; and such defects must appear within the period stipulated in the contract. Once, however, the contractor has obtained a certificate of satisfactory completion, and it is obviously meant to be conclusive, no further call can be made upon him to rectify any defects. Under a defects clause, *ipso facto*, there is no liability cast upon the contractor to rebuild after destruction by fire or other accident, the cause of which was outside his control or undertakings. Whereas when the clause obviously makes the contractor liable to *repair*, or to maintain and uphold, he must regard himself as being in a similar position to a lessee under a repairing lease, and therefore liable to reinstate the buildings in case of fire or accident or other injury to them except by default of his employer.

Hence it follows that for his own protection a contractor must have regard to the risks he runs, and protect himself by insurance, irrespectively of the requirements of the insurance clause in the contract.

In this connection it may be mentioned that many insurance policies give the insurers an option to reinstate the buildings themselves if they are destroyed (or injured) by fire; and if the insurers exercise that option, they are bound by it, and accept the liabilities and undertakings which would be those of a contractor who had undertaken to complete the entire work, i.e., they must perform all the necessary work to complete the whole at whatever cost.

THE BUILDING TRADE

USE AND ABUSE OF BUILDING MATERIALS

By A. M. GILES, B.Sc., A.I.Struct.E., A.M.I.E.E.

XVIII.—PLASTERS (CONTD.) AND CEMENT.

Proprietary Plasters.—The question of the number of proprietary plasters or cements that are now obtainable would seem to emphasise the fact, previously mentioned, that numerous experiments are continually being conducted with the view of obtaining a really ideal plaster. The outstanding point of these experiments is that the basis, in all cases, is gypsum or plaster of Paris. Numerous other chemical compounds have been mixed with the gypsum and the varieties of methods of treatment of the mixture have produced, as a final result, plasters with widely differing properties though, in the main, they satisfy the essential requirements.

In one case we find that a plaster giving a good, hard, durable surface and one that will take paint well has been produced by mixing a small percentage of glauber salts (Na_2SO_4) or potassium sulphate (K_2SO_4) with the gypsum and then heating the mixture to a very high temperature. In another case potassium carbonate (K_2CO_3) is mixed with the plaster of Paris and, after the requisite calcining and grinding, a really white cement plaster having, it is said, an extremely good covering property is the result.

Another plaster that is very much in favour nowadays and used solely for interior work is obtained by mixing, thoroughly, gypsum with petroleum. It is claimed that this plaster, because of the petroleum, has the properties of quick-setting and drying to a good hard surface, *i.e.*, very much harder than that obtained by the use of ordinary lime plaster.

To obtain the best results with any of these proprietary plasters, their respective "directions of use" should be faithfully observed. In spite of this, however, it is not an unusual occurrence to meet with plasterers and others who have particularly diverging opinions as to the quantities of sand that should be used for the different coats as well as what should happen when metal instead of wooden laths are used. In all cases, however, it is agreed that, because their quick-setting property renders the time of manipulation very limited, none but really efficient plasterers can use them satisfactorily.

One does occasionally find that in certain circumstances a delay in the time of setting is desirable and most plasterers will have their own method of bringing this about. One hears of the use of such things as size water, ammonia, and stale beer, as well as the chemical compound zinc sulphate. The last substance has a most marked effect upon the time of setting and, at the same time, is said to produce an increased hardness in the final set.

There still remain two or three items of general interest in connection with plaster. For example, there is the term "gauged" stuff. This is a mixture that has its time of setting slightly accelerated by the addition of plaster of Paris to one of the other forms of lime plaster. Some people call it the two "p's," *i.e.*, putty and plaster, since the putty in the form of coarse stuff, or setting stuff, or even quite plain is gauged or made up with plaster of Paris. It is said that the proportion of plaster of Paris to the putty stuff may vary from 1 to 1, to 1 to 4 or 5. Naturally, the greater the percentage of plaster the quicker the time of setting, and the use of this gauged stuff finds much favour since one is able to follow up with the second coat very quickly after rendering with the first coat.

Laths.—In places where plaster is not used as a covering for brick walls, such as ceilings as well as interior dividing walls, some form of laths has to be used as the groundwork or base upon which the plaster can be fixed. These laths are nailed or fastened to joists in the ceiling, and to posts, or studs as they are called, in the walls. The laths or strips are generally of Baltic fir, though oak is sometimes used as well as the many new patterns of metal that are continually coming on to the market. The wood may be torn or sawn into laths, though it is generally agreed that the torn variety is far and away the better, since the fibre will be continuous throughout their length. These can be bought in bundles varying in length, by 6 in. at a time, from 2 to 5 ft. The standard width is 1 in., but they may vary in thickness from $\frac{1}{8}$th to $\frac{3}{8}$ths of an inch. They are usually described as single, lath and a half, and double. The singles are $\frac{3}{16}$ths of an inch thick, while the lath and a half may vary from $\frac{7}{16}$ths to a $\frac{1}{4}$ of an inch, and the doubles from $\frac{1}{4}$ to $\frac{3}{8}$ths of an inch.

When fitted to the joists or studs they should not be more than $\frac{3}{4}$ths of an inch apart. This space is left so that the plaster can be forced in between them so as to get a really good grip. As compared with the use of sawn laths it is said that the torn laths require a thicker coating to bring the plaster to a smooth even surface.

With respect to metal lathing, there is a number of proprietary kinds on the market, and they mostly consist of thin sheets of steel cut, stamped and bent into various patterns and shapes for the particular purpose for which they are to be used. Naturally they will all be treated with some preservative or preventive against formation of rust. It is generally admitted that they are superior to any kind of wood laths.

Fibrous Plaster.—As a conclusion to the information about plasters, a few remarks may be made about fibrous plaster, or "stick-and-rag," as it is sometimes called. In connection with this, one very fine and imposing "stick-and-rag" roof comes to mind. The fibrous plaster is made of plaster of Paris reinforced by canvas, with a fairly open mesh, backed up by wooden laths, or even wire netting, though in the case of the wire netting there is the objection that it is difficult to cut it into the required shapes. It can be used, with a most imposing effect, to imitate masonry, and though its use is confined to interior work, it can be employed, as a temporary measure, for external work, such as was done at the Wembley Exhibition and is still being done by many of the big film companies.

Though there are many other points in connection with the use of plaster upon which there is much valuable information, it is suggested that those who would wish to pursue the subject further might refer to such books as, say, "The A B C of Plastering," published by the Oxford University Press, or "Plastering, Plain and Decorative," by Wm. Millar, published by Messrs. Batsford, as well as many others.

CEMENT.

Although cement might have been included among the hydraulic limes, it is of such importance nowadays that a rather fuller description of its composition, manufacture and uses is desirable. One has only to think of the tremendous amount of building practice involving the use of reinforced concrete to understand how necessary is a thorough knowledge of its attributes—both theoretical and practical.

History.—There is no doubt that cement was known to the Romans in the form of a cement concrete. They are said to have made a mixture of lime and a broken-up volcanic deposit, which in its composition had some form of silica compound called pozzuolana. The mixture, upon having water added, was found to set and harden as concrete.

This mixture, however, must not be confused with Roman cement, which was discovered by Joseph Parker somewhere about the year A.D. 1800. A mixture composed of clay (about 40 per cent.) and lime carbonate was taken from the estuary or lower reaches of the Thames. This substance, after being burnt or calcined at a comparatively low temperature and then crushed, was found to possess similar setting properties when mixed with water. It is known that it sets very quickly—*i.e.*, in about a quarter of an hour after mixing. Its mechanical strength is much less than that of Portland cement, and, when mixed with sand, it is a great deal less; consequently its use has almost entirely been superseded by Portland cement.

Though it is customary for us to associate the manufacture of cement with the banks of the Thames, particularly on the Kentish side, it must not be forgotten that in 1824 a Leeds bricklayer, named Aspdin, took out a patent for its manufacture.

We are told that, three years after Aspdin had started a factory at Wakefield, his cement was used by Brunel in the construction of the Thames Tunnel. Two years later it is known that Sir Wm. Pasley, working quite independently at Chatham Dockyard, found that by mixing a local chalk with Medway clay he could obtain a very good cement. To this discovery may undoubtedly be ascribed the growth of the large number of cement factories along the banks of the Thames estuary. Though it is often stated that the best cement comes from Thames mud mixed with chalk, it is also known that extremely good cements are obtained in other parts of the country, such as places as far apart as Newcastle, Cambridge, and Cardiff, as well as the famous Lias clays found near Rugby.

Composition.—The result of many analyses shows that the approximate composition of manufactured cement is 60 to 65 per cent. of lime, 20 to 25 per cent. of silica, 5 to 10 per cent. of alumina, a small percentage of oxides of iron, and a still smaller percentage of other impurities. The really important parts of it are the compounds of silica and alumina with the lime—known as the silicates and aluminates of lime—which have been obtained by the correct calcination of the proper mechanical mixture of clay and chalk. The silicate of lime is perhaps the most important compound, and its chemical formula is often given as $3CaO.SiO_2$. Though little is really known of what actually happens when setting takes place due to its mixture with water, it is suggested that this silicate of lime breaks down to a compound having one molecule of lime, the other molecules combining with water to form hydrate of lime.

Among the other impurities, mentioned above, there is one to which a certain amount of importance is attached. It is known as sulphur anhydride. Its chemical composition is SO_3. It will combine with water to form sulphuric acid (H_2SO_4), while it will also combine with lime to form calcium sulphate according to the following equation, *i.e.*,

$$CaO + SO_3 = CaSO_4$$

Lime + sulphur anhydride = Calcium sulphate

The presence in the cement of this sulphur anhydride is of doubtful advantage, since by its combination with lime to form lime sulphate, the setting time of the cement is somewhat delayed. Because of this, the percentage of sulphur anhydride in any par-

ticular supply of cement is usually carefully specified. Certainly it must not be more than 2.75 per cent.

The better way of treating the question, and one that is adopted by most firms when rendering a certificate of the chemical analysis of their cement, is to give the ratio of the lime—after the amount to satisfy the sulphur anhydride has been deducted—to the sum of the silica and the alumina. The value of this ratio should not be greater than 2.9 nor less than 2.

This is sometimes given as a formula, thus:—

$$\frac{\text{Lime}}{\text{Silica} + \text{Alumina}} = \text{between 2·9 and 2·0.}$$

This ratio is very often not thoroughly understood, whereas it should be quite clear.

In an actual cement certificate the numbers given under "chemical analysis" were as follows:—

Silica 22·02 per cent; alumina 5·10 per cent.; oxide of iron 3·0 per cent.; lime 64·89 per cent.; magnesia 0·85 per cent.; sulphur anhydride 1·83 per cent., with about 2 per cent. of other impurities.

The molecular weight of lime is 56, and of sulphur anhydride 80; therefore the percentage of lime to satisfy the 1·83 per cent. of sulphur anhydride in the sample is calculated as follows:—

$$1{\cdot}83 \times \frac{56}{80} = \underline{1{\cdot}281 \text{ per cent. of lime.}}$$

Deducting this amount from the percentage of lime given above we get 63·609 per cent. left, i.e., 64·89 — 1·281 = 63·609 per cent. of lime.

Now divide the percentages of lime, silica and alumina by their respective molecular weights, and we get:—

$$\text{Lime } \frac{63{\cdot}609}{56} = 1{\cdot}136.$$

$$\text{Silica } \frac{22{\cdot}02}{60} = 0{\cdot}367.$$

$$\text{Alumina } \frac{5{\cdot}10}{102} = 0{\cdot}05.$$

Now apply the formula—

$$\frac{\text{Lime}}{\text{Silica} + \text{Alumina}} = \frac{1{\cdot}136}{0{\cdot}367 + 0{\cdot}05} = \underline{\underline{2{\cdot}72.}}$$

This value comes well within the limit of 2·0 and 2·9.

SEALED BILLS OF QUANTITIES

A NOVEL point appears to have been raised in the case Willcocks and Barnes *v.* The Paignton Co-operative Society, Ltd. (*The Times*, April 8; *The Builder*, April 25.) The plaintiffs, in response to advertisements inviting tenders, had, in accordance with the terms of the advertisement, applied for bills of quantities, and the bills of quantities had been supplied by the defendants' surveyors accompanied by a letter saying that sealed and endorsed tenders were to be delivered by a certain date and the priced bills of quantities were to be sent in a separate sealed cover to the defendants' architects. The letter further stated that the bills would be returned unopened in the case of unaccepted tenders after the contract had been signed, and a like statement was contained in the bills of quantities.

The plaintiffs duly tendered in accordance with these instructions within the times named, and delivered the sealed priced bills to the architects. On the same day that the tenders were received (December 18, 1928) at a meeting of the defendants' managing committee it was resolved that the architects be asked to verify the plaintiffs' bills of quantities and to report thereon, and in pursuance of this resolution the defendants' quantity surveyors obtained the bills from the architects, and checked them, returning them to the architects as correct. Subsequently, at a special meeting (December 22) of the defendants' managing committee it was resolved that the architects be asked to include in their verification of bills of quantities those relating to a tender by another firm and that their reports be considered at a special meeting to be held on December 28. At that meeting on December 28 it had been resolved to accept the tender of the other firm.

It was contended on behalf of the plaintiffs that the opening of their sealed bills of quantities constituted an acceptance of their tender by the defendants, and that the return to them of the bills opened, by the architects on January 2, 1929, after the bills had been checked, was a signification to the plaintiffs of that acceptance and that thus there was a complete contract between the parties. A partner in the plaintiffs' firm had called on January 2, 1929, at the offices of the architects and had an interview with one of the partners, and in that interview he was informed that at the original meeting on December 18 the committee had decided to accept the plaintiffs' tender, but that at the subsequent meeting they had decided to accept the tender of the other firm, and at that interview the bills of quantities with the seals broken were handed back to the representative of the plaintiffs. On January 4, in a letter, the architects informed the plaintiffs that the tender of the other firm had been accepted.

The Lord Chief Justice, in giving judgment, is reported to have said that he regretted being unable to agree with the plaintiffs' contention: they seemed to have been shabbily treated, but even were it assumed when the first resolution was passed on December 18 that the bills should be verified that it was the intention of the defendants to accept the plaintiffs' tender, that would not suffice, for an intention to accept an offer is not an acceptance unless and until it is communicated to the person making the offer, and in this case the return of the bills opened could not be regarded as the communication of an acceptance because before they were returned, the member of the architect's firm had informed the plaintiff's representative in the interview that another firm's tender had been accepted.

It appears from the report that when the defendants' quantity surveyors applied to the architects for the bills to verify them they considered that the tender was to be accepted, and for that reason applied to the architects for them, and it is also to be observed that in the judgment the Lord Chief Justice is further reported as having said that the defendants' counsel had admitted that what had been done was highly undesirable and that the bills ought to have been returned unopened to the plaintiffs. It is to be hoped that the comment of the Court on the treatment the plaintiffs had received, and the admission by the two eminent counsel for the defendants on the highly undesirable course adopted by the defendants in this case and the proper practice to be observed will serve to prevent any repetition, but if this is not the case, those tendering for contracts will have to take steps to have their interests protected by conditions in the invitation to tender.

Miners' Welfare Fund.

The eighth Report of the Committee appointed by the Board of Trade to allocate the Miners' Welfare Fund has made its appearance. From it we learn that the total amount allocated for buildings and equipment during 1929 was £87,662. Research work has also been continued under various heads, including wire ropes and mine ventilation. New buildings are contemplated at a number of universities and technical colleges, details of which appear in the Report, obtainable, price 1s. 6d., from H.M. Stationery Offices, at Kingsway, W.C., or elsewhere.

SEQUESTRATION AGAINST A LOCAL AUTHORITY

Proceedings of a rather unusual nature appear to have been taken in the case, Drury *v.* Chelsea Corporation (*The Times*, February 26 and 27). The motion—to serve a writ of sequestration—was brought by the tenant of a flat, a solicitor, against the Corporation, who alleged that he and his family had suffered from bad throats owing to dust collected from the flats by the servants of the Corporation in open baskets, entering his kitchen. It appears from the report that the nuisance had been experienced first some time in 1928, and that as no notice had been taken of his complaints, the plaintiff had taken proceedings in October, 1928, and in those proceedings the defendants had given an undertaking to use their best endeavours to prevent the dust from the refuse escaping into the plaintiff's premises and to remove the refuse from the yard only in closed metal bins. The exact nature of these proceedings and the nature of the order or undertaking are not stated in the report. The Corporation, it was alleged, carried out their undertaking, removing the refuse in closed bins until November, 1929, when the family were again attacked with bad throats, and on November 29 the plaintiff had seen the dust being removed in open wicker-baskets. There was a conflict of evidence as to the number of occasions on which this had occurred, but the Court found that this was not an isolated instance, and that on some occasions before that the dust had been removed in open baskets. The Court, in giving judgment, said that for a writ of sequestration to issue against a corporation there must have been wilful disobedience of an order, but the Corporation could only act through its servants, and disobedience of officers who had been instructed not to do the act complained of was disobedience of the Corporation. The plaintiff was therefore technically right in the proceedings in moving for a writ of sequestration, but whatever his remedy the Court would look at the reasonableness of the plaintiff's conduct in considering the costs, and it appeared that here the plaintiff had not been quite reasonable, for the chances were that had the plaintiff rung up the borough surveyor the matter would have been settled, and precautions taken that it should not occur again, and in these circumstances an injunction was granted, but the plaintiff was ordered to pay the costs of the motion as between party and party. It was stated in the course of the case that the plaintiff did not seek sequestration, but that the application for a writ appeared his only remedy in law.

Order 42, rule 31, of the Rules of the Supreme Court provides: Any judgment or order against a corporation wilfully disobeyed may by leave of the court or a judge be enforced by sequestration against the corporate property or by attachment against the directors or other officers thereof, or by writ of sequestration against their property. The present report does not state how the injunction was granted. In Stancomb *v.* Trowbridge Urban District Council (1910, 2 Ch. 190) it was held that "wilful disobedience" within the order set out above in the case of persons restrained by injunction only excluded casual, accidental or unintentional acts, but it was no answer to say that the act was not contumacious in the sense that in doing it there was no direct intention of disobeying the order. In the same case it was also held that in the case of a corporation which could only act by its servants or agents it was no answer to say that, done as the act must be by an officer or servant of the council, the council was not liable, even though the act might have been done through carelessness, neglect or even in dereliction of duty on the part of the servant.

NEW BUILDINGS IN LONDON

Acton.—Store.—Messrs. Sutton and Sons propose erecting petroleum spirit store and pump on a site off Haven Green.

Berkeley-square. — Alterations. — The tender of Messrs. T. H. Adamson and Sons, 129, High-street, Putney, S.W.15, have been provisionally accepted for alterations to 35, Berkeley-square, W. Their estimate was £3,994. The architects are Messrs. Alder and Tarrill, Effingham House, Arundel-street, Strand, W.C.2.

Canning Town.—Building.—For the erection of the Canning Town employment exchange H.M.O.W. have entrusted the contract with Messrs. G. E. Wallis & Sons, Ltd., Medway House, 11 and 12, Old Cavendish-street, W.1.

Chiswick.—Alterations.—Mr. P. W. Home has submitted plans to the local council for alterations and new building line in connection with proposed new premises at No. 148, High-road, W.

Chiswick.—Conveniences.—The Chiswick and Brentford U.D.C. are inviting tenders for the erection of two public conveniences in Chiswick House ground, W.4.

Clerkenwell. — Building. — Messrs. A. Roberts & Co., Ltd., 74, Earl's Court-road, Kensington, W.8, have secured the contract for the erection for H.M.O.W. of Clerkenwell County Court.

Croydon.—Stores.—Mr. C. H. Ridge, of Katherine-street, Croydon, has prepared plans for a brewery bottling stores in High-street.

Croydon.—Extensions.—The C.B. has received provisional approval of the M.H. to the expenditure of £10,576, in connection with the Mayday-road Hospital laundry extension, mesaroom extension, alterations at administrative block. A contract has been entered into with Messrs. James Smith and Sons, Ltd., of South Norwood, S.E.25, for the work.

Croydon.—Premises.—The Council agreed to grant a building lease to Mr. and Mrs. Bastow, of a site south of No. 93, High-street, for construction of a shop and dwelling-house. The plans have been prepared by Messrs. Blake, Son and Williams, architects.

Croydon.—Additions.—The Committee of Management of Pilgrim Fort have had under consideration the question of providing accommodation for the parties of school children camping at Pilgrim Fort, and the Croydon E.C. have had before them plans prepared by their Surveyor, Mr. A. Sunderland, F.R.I.B.A., for providing three semi-permanent buildings to accommodate a total number of 40 children and two teachers, at an estimated cost of £840. The plans have been approved.

Edgware.—Depots.—Site in the High-street, has been acquired by the London Co-operative Society, Ltd., of Maryland-road, Stratford, E.15, where it is proposed to erect depots. The buildings will be erected by the society's works department, under the direction of the manager, Mr. A. Hulbert, Whitta-road, Manor Park, E.12.

Gower-street.—Rebuilding.—Messrs. Swan, Norman and Clay, 8, Cliffords-Inn, W.C., have prepared plans for the rebuilding of premises at 62 and 64, Gower-street, now occupied by the Royal Academy of Dramatic Art. Demolition work will be carried out by Messrs. Willment, of Waterloo Bridge, and the front portion will be rebuilt by Messrs. C. F. Kearley, Ltd., Gt. Marlborough-street, W.1.

Gunnersbury.—Church.—Rev. D. F. Roche is negotiating with the local authorities and Gunnersbury Park Joint Committee with regard to the proposed Roman Catholic chapel, presbytery and private boys' grammar school on land on the south side of Pope's-lane, opposite to Ash and Beech-gardens. An architect has not yet been appointed.

Hampstead.—Extension.—Mr. H. B. Scott, 11, Finsbury-square, E.C.2, is the architect for extensions to St. Agnes' School.

Hanwell.—Church.—Ealing T.C. have been informed that the owners of the existing church, at the corner of Uxbridge-road and St. George's-road, W., propose to pull down the premises and to erect a larger church, ancillary buildings, and a small block of flats. The plans are being prepared by Messrs. Pipe and Hunt, 87, George-street, Portman-square, W.1.

Hendon.—Church.—A site has been acquired for a new Presbyterian Church of England. The arrangements are in the hands of the Rev. J. Johnston, M.A., 7, Bracknell-gardens, N.W.3.

Hendon.—Hall.—The Territorial Force Association are about to erect a new drill hall on the Rookery estate, N.W. Plans have been prepared by the architect, Mr. S. W. Cranfield, F.R.I.B.A., 7, Bedford-square, W.C.1.

Hendon.—Shops.—Plans have been approved for a block of shops and flats in Watford-way, N.W. The architects are Messrs. P. V. Burnett and C. Eprile, AA.R.I.B.A., 107, Jermyn-street, St. James's, S.W.1.

Hendon.—Stores.—Messrs. Johnston Evans, estate agents, have sold a site in Watford-way, N.W., to Messrs. F. W. Woolworth and Co., Ltd., of Victory House, Kingsway, W.C.2, who propose to erect a large block of premises. The plans are being prepared by the company's own architect.

Hounslow.—Garage.—A site at the corner of the Great West-road and Green-lane, has been acquired by Messrs. T. E. and H. J. Smith, for the erection of a garage and buildings. The plans have been submitted by Mr. G. W. Manning, Laleham, Staines.

Hounslow.—Houses.—The Merrivale Nurseries Estate in Heston-road, between The Green and Fran-lane, is to be developed by the erection of nearly 200 houses. The promoters are Messrs. Edwards and Thomson, builders, Lampton-road.

Hyde Park. — Pavilion. — Messrs. Negus Ltd., 1, Laurence Pountney Hill, E.C.4, are to erect a sports pavilion in Hyde Park, W., for H.M.O.W.

Ilford.—Houses.—The T.C. are inviting tenders for the erection of 146 houses on Fencepiece-road housing estate, Barkingside.

Kensington.—Conversion.—The B.C. are to purchase 12, Penzance-place, W.11, and convert same into flats.

Knightsbridge. — Reconstruction. — The London Underground Railways Co., are preparing plans for the reconstruction of their Knightsbridge station. The company's chief architect is Mr. S. A. Heaps, L.R.I.B.A.

Limehouse.—Reconstruction.—A scheme for reconstructing the old bridge over Limehouse Cut is being prepared by the Borough Surveyor.

Marble Arch.—Hotel.—The Greenham Demolition Co., Ltd., London-road, Isleworth, are clearing a site comprising Nos. 542-558, Oxford-street, Nos. 2-3, Marble Arch, Nos. 2-4, 8, 10, 14, 14a, Great Cumberland-place, Nos. 33-49, Bryanston-square, Nos. 11-17, Old Quebec-street, preparatory to the erection of an hotel for Messrs. J. Lyons and Co., Ltd., of Cadby Hall, Kensington, W.14. The hotel has been designed by Mr. F. J. Wills, F.R.I.B.A., 62, Oxford-street, W.1.

Mill Hill.—Institution.—Hendon Council have granted an Interim Development Order under the Town Planning Scheme in respect of about nine acres of land at the junction of Watford-way and Stoneyfields-lane, N.W., where it is proposed to erect a large institution for the blind. The plans are being prepared by Messrs. W. H. Woodroffe and Son, 5, Bedford-place, W.C.1.

Museum-street.—Buildings. — Messrs. G. Allen & Unwin, Ltd., book publishers, have arranged with Messrs. F. & F. H. Higgs, builders, of Station Works, Hinton-road, S.W., to construct a substantial block of buildings for them immediately behind their offices in Museum-street. The new premises will stretch from Little Russell-street, where the main entrance will be situated, to Gilbert-street, where there will be a goods entrance. Messrs. Hayward & Maynard are the architects.

Norbury.—Library.—The Croydon C.B. has accepted a tender for the erection of the proposed Norbury branch library, at the corner of Beatrice-avenue and London-road, Norbury. The successful contractors are Messrs. J. Elliman and Son, of Beckenham, at £12,893.

Notting Hill.—Flats.—21 flats are to be erected in Kensal-road by the Kensington Housing Trust, Ltd.

Oxford-street.—Shops.—Messrs. Slater and Moberly, of 46, Berners-street, W.1, have prepared plans for a block of shops, offices and showrooms at 104, 106 and 108. The old premises are being demolished by the Greenham Demolition Co., Ltd., London-road, Isleworth.

Piccadilly. — Extensions. — Messrs. Willment Bros., of Waterloo Bridge, S.E.1, are engaged on excavation work prior to the erection of an extension to the premises of the Park Motor Co. in Wells-street, S.W.1. Plans have been prepared by Mr. F. J. Wills, F.R.I.B.A., 62, Oxford-street, W. The contract has been placed with Messrs. Bovis (1928), Ltd., of 43, Upper Berkeley-street, W.1.

Poplar. — Shops. — London Co-operative Society, Ltd., Maryland-road, Stratford, E.15, have acquired Nos. 167, St. Leonards-road and 34, Bright-street, E., for shops and showrooms. The plans are being prepared by the society's architect and works manager, Mr. A. Hulbert, Whitta-road, Manor Park, E.12.

Stepney.—Additions.—Alterations and additions are being carried out at 350, Mile End-road, E.1, by Messrs. Franks & Simons, building contractors, 340, Mile End-road, E.1, to the plans prepared by Mr. Stanley Towse, F.R.I.B.A., architect, 9, Newcomen-street, S.E. Messrs. Young & Co., 6, Queen Anne's-gate, Westminster, S.W.1, are supplying the constructional steelwork.

Stepney.—Additions.—Messrs. W. S. & A. T. Johnson have submitted a successful application to the B.C. for additions at the premises of Messrs. Harrison & Garthwaites, Narrow-street, E.

Stepney.—Dwellings.—The Borough Engineer and Surveyor, Mr. B. J. Belsher, F.R.I.B.A., has submitted plans which have been approved for the erection of dwellings to abut on Chivers-court and Brightlingsea-place, E.

Twickenham. — Alterations. — Plans have been prepared for alterations and additions to the "Lord Napier" public-house. The contract has been placed with Messrs. T. Hiscock, Ltd., Chapel-road, Hounslow. The architects are Messrs. F. J. Fisher and Son, 35, John-street, Bedford-row, W.C.1.

Twickenham. — Houses. — T.C. have accepted the tender for the erection of 72 houses and other works at Fielding-aveme on the Leeson Estate, submitted by the Grosvenor Construction Co., Ltd., at £29,224.

West Ealing.—Alterations.—Messrs. Whitbread and Co., Ltd., are in communication with the council regarding the proposed alterations, etc., at the "Olde Hatt" public-house in West Ealing-broadway, W. The company's architect is Mr. A. R. Mayston, F.R.I.B.A., 49, Chiswell-street, Clerkenwell, E.C.

Willesden.—Works.—A site on the North Circular-road, N.W., has been selected by Messrs. Shepherd Tobias and Co., 8, Charing Cross-road, W.C.2, for new glass works. Plans are by Mr. Morgan Willmott.

Willesden-green.—Stores.—The large site at No. 192-206, High-road, N.W., has been purchased by the London Co-operative Society, Ltd., Maryland-street, Stratford, E.15, for the erection of departmental stores. The plans are by Mr. L. G. Ekins, F.R.I.B.A., 99, Leman-street, E.1, architect to the Co-operative Wholesale Society (Southern Division).

DISTRIBUTION OF STEAM IN FACTORIES

In the course of a paper on "The Economical Production and Distribution of Steam in Large Factories," given before the Institution of Mechanical Engineers, on April 25, Mr. Francis Carnegie dealt particularly with the Royal Ordnance Factories at Woolwich, and pointed out that in factories which had grown up from relatively small beginnings, many anomalies must of necessity exist from the very nature of their growth, which was a stage-by-stage process, individual stages often being comparatively small. Consequently it was found advisable to adopt methods and plant which, in themselves, were far from ideal, mainly because the change was not sufficiently great to warrant a wider departure from existing practice even though that might have been somewhat inefficient and old-fashioned. These anomalies were accentuated in the Ordnance Factories by the sudden and temporary enlargement of different departments within the factories which occurred during the War.

The lecturer summarised his general conclusions as follows :—(1) That in factories where steam is generated in separate and scattered boiler-houses it would be economical to concentrate the supply of steam, either at definite steam-load centres, or at one centralised steam-production centre, dependent on the size of the factory and on local considerations.

(2) That where a considerable steam load existed within a prescribed area in which there was a large, high-pressure steam generating plant, *e.g.*, an electric generating station, possessing facilities for the economical purchase and handling of its coal, a common supply of steam might be given therefrom at a lower cost than the supply from separate boiler plants. If power requirements also existed in the area, the use of bleeder turbines in conjunction with the common steam supply might give still greater economy. The adoption of such a system would entail special care in the treatment of feed-water owing to the high percentage of make-up entailed, but this did not present insuperable difficulty.

(3) That provided a reasonably large total load was assured, steam might be economically distributed for heating of buildings and cooking purposes, etc., to considerable distances from a central generating plant at a price per therm not greater than the cost of solid fuel burnt in small local heating installations, whilst its greater cleanliness and ease of control were of distinct advantage, and were gained at a much lower cost than that of either gas or electricity.

(4) That the relative cost of generation of steam in various types and sizes of boiler plant was affected greatly by local considerations, not the least of which was the proximity to a suitable coal supply, and the method of internal handling of this material. In the case of a factory which had facilities for taking in sea- or rail-borne coal at its own wharf or siding, a centralised boiler-house receiving its coal direct from the vessel or siding had an immense advantage compared with a series of scattered boiler-houses to which the coal must be delivered at an additional cost of several shillings per ton. In such a case it was manifestly cheaper to distribute steam in bulk over any distance normally found in a single factory than to deliver specially a corresponding amount of coal.

(5) That the relative effects of capital expenditure and labour charges depended upon the scale of operations and the load factor upon the plant, as well as upon the type of plant installed. The thermal efficiency of the plant was affected not only by its general design and the care with which its heating surfaces were proportioned and arranged, including the waste-heat recovery plant, but also by the heat capacity of the plant itself and by the extent and arrangements of the radiating surfaces from which stored heat could be lost during periods of idleness or low load.

(6) That the effect of large heat capacity in a plant was most deleterious when short-period intermittent working was imposed by the load conditions, for example, with Lancashire type boilers. It was found that bringing up the output of a boiler to full load involved the loss of at least one hour's full fuel consumption as compared with steady full-load working.

(7) That the transmission of high-pressure steam over any distance normally found in a single factory was perfectly feasible and practical from the purely technical point of view, and that the efficiency of a properly planned distribution system could be made much higher than was generally supposed.

(8) That the economical aspects of long-distance distribution or conveyance of steam depended entirely upon the relative costs of generating steam in centralised as compared with scattered boiler-houses, and upon the size of the factory, it being necessary to gain in increased economy and efficiency of generation more than the losses in an extensive distribution system.

(9) That technical records were essential to the management of a steam production and distribution plant if thermal efficiency and financial economy were to be obtained.

(10) That a cost-accounting system was necessary to enable accurate detailed costs to be in the hands of the management for examination and criticism at the earliest date possible after the actual expenditure. The records provided by such a system at once threw into relief any high points in the cost of production and distribution and suggested ways and means by which a reduction in cost might be effected.

MUNICIPAL YEAR BOOK.

The "Municipal Year Book" for 1930 has now made an appearance, published by the *Municipal Journal*, Ltd., Sardinia House, W.C.2. It incorporates much information and many useful articles. The Minister of Health (Mr. Arthur Greenwood) contributes a preface in which he says, "There is still a great deal to be done. The conscience of the country demands more vigorous measures to deal with slums. Hospital provision must be made more systematic and general, in fullest co-operation with the voluntary services to which the country owes so much. The provision of pure and adequate water supplies, the very foundation of public health, has to be made more secure and more rational. Pollution of our streams has to be prevented. By no means least, because of its wide bearing on prosperity and well-being, still further measures have to be taken in towns and rural and regional planning, for already developed as well as for new areas, so that we may avoid the heavy toll exacted from haphazard development, not only in money but in life itself." That is a very fair resumé of the work that lies in front of our local authorities, and in that work the "Municipal Year Book" cannot but be of great assistance. A summary of Local Government in 1929 is included, which gives a representative account of the year's activities. New features are a section devoted to Public Assistance, intended to present a conspectus of the new administrative arrangements which came into force on April 1. There is also included for the first time in this annual a directory of officers in the service of local governing bodies which arrives very near completion.

Proposed New Municipal Buildings, Derby.

The Derby Town Council has decided to erect a new town hall on the north side of Derwent-street. A new combined police and fire station is also to be erected on Harwood's site, and will include living quarters for firemen, market, bus station, and gallery and gardens.

PUBLIC WORKS CONGRESS: FINAL REPORT, 1929

The final report of the Public Works, Roads and Transport Congress and Exhibition, 1929, has now been published by the Congress Organising Committee, at 84, Eccleston-square, S.W.1. In it are contained a full report of the proceedings at the 1929 Exhibition; details of the delegates (1,456 from 801 local authorities attended); report of the official banquet; the distribution of the prizes to successful competitors in the papers competition; and, what should be vastly useful to every municipal officer, the full text of the various prize-winning papers submitted, with a report of the discussions which followed. The town-planner will find of interest the papers on "The Arrangement and Economics of a Town Plan" and "The Inter-Relation of Public Services and Town Planning," by Mr. B. Price Davies, F.S.I., and Miss Jocelyn F. Abram, A.M.T.P.I., respectively. A subject of widespread interest at the present time, "The Widening of Highway Bridges," by Mr. C. S. Chettoe, A.M.Inst. C.E., will prove of value to highway engineers, and a variety of papers on subjects ranging from water supply and sewage disposal to preservation of rivers and road surfaces all tend to increase the value of this most useful publication.

NEW CINEMAS

Ayr.—Mr. John Fairweather, F.R.I.B.A., 182, Trongate, Glasgow, is architect for the new "Playhouse" cinema, which, as announced in our issue for April 18, is to be built in Boswell Park. Plans for the building, which is to cost £25,000, and is for Messrs. George Green, Ltd., of Glasgow, have been passed by Ayr Dean of Guild Court.

Gravesend.—A 2,000-capacity cinema is planned in King-street, to plans by Mr. G. E. Clay, A.R.I.B.A., 198, Parrock-street, Gravesend.

Wimbledon.—We are informed that in connection with the burning out of the Queen's Cinema, announced in these columns, Mr. A. Victor Farrier, A.R.I.B.A., 7, Thornton-hill, S.W.19, has been instructed to prepare plans for reinstatement.

PATENTS

APPLICATIONS PUBLISHED.

298,608.—British Celanese, Ltd.: Coating of surfaces.

325,804.—J. L. Mohun and H. Piesch: Window construction.

325,842.—H. T. Robinson: Setters employed for firing china.

325,911.—J. A. Watson: Parquetry and like sectional flooring.

325,932.—E. Edwards: Windows, windscreens, and ventilating devices.

325,943.—A. W. Cross: Kerbing and draining of carriageways and roads.

325,969.—G. E. Barnhart and H. E. Pfaff: Composition shingle construction.

306,945.—Oxford Varnish Corporation: Treating the surfaces of partition and wall board.

325,991.—H. Hamakado: Process for manufacturing waterproof composition for Portland cement.

326,002.—H. Pardoe and A. B. Britton: Cement guns.

306,955.—H. Studli: Machines for producing pressed moulded articles.

326,012.—O. J. Masterman and J. Dixon: Concrete and analogous floor construction.

Note.—Period for opposition expires May 12, 1930.

TRADE NEWS

Railings and Gates.

Messrs. T. W. Palmer & Co., of Merton Abbey, S.W.19, have just produced a new railing and gate list. The list is very comprehensive and is available to anyone applying for a copy.

"Ambron House," Vauxhall Bridge-road.

In connection with this work, illustrated in our last issue, we are asked to state that the whole of the fibrous plaster, stuke and solid plastering shown in our illustrations was carried out by Messrs. Henry Hartley & Co.

New Directorships.

Messrs. Trollope & Colls, Ltd., announce that they have appointed three members of their staff as technical directors, viz.: Mr. A. B. Challacombe and Mr. J. M. Firth (head office managers) and Mr. T. B. McMillan (Dorking manager).

Building Science Abstracts.

We have received a copy of the March issue of "Building Science Abstracts," issued by the Department of Scientific and Industrial Research, containing abstracts of articles on a great variety of building materials in various home and foreign technical publications. Copies, price 9d. net, may be obtained from H.M. Stationery Office or their agents.

Second-hand Scientific Instruments.

A considerable variety of second-hand scientific instruments appear in the classified list, 97, which Messrs. C. Baker, of 244, High Holborn, W.C.1, have issued. Architects or surveyors who are looking for reliable surveying instruments, drawing instruments, etc., should obtain a copy of the list.

Incorporation of Builder's Business.

We are informed that Mr. Horace V. Clogg has incorporated his business as a private limited company, and, in consequence, the business will be known henceforth as Horace V. Clogg, Ltd. Mr. Sydney W. Mills, the manager, who has been actively associated with the business for many years, has joined Mr. Clogg as a director of the company.

New Cinema, Richmond.

In connection with the illustrations and description of the new cinema, shops and flats, Richmond, Surrey, published in our last issue, we are informed that Messrs. Clark and Fenn, Ltd., of Charlotte Studios, Charlotte-place, Clapham, S.W.4, were alone responsible for all the fibrous plaster work. The architects were Messrs. Leathart and Granger, FF.R.I.B.A.

Dorking Property Sale.

Messrs. Golbie and Green, of 9, Bruton-street, W., will offer "The Shellwood Manor Estate," about four miles from Dorking, in 48 lots at the White Lion Hotel, Dorking, on May 12. Included in the lots are Shellwood Manor, a fine old residence, partly dating back to the 15th century, two excellent farms, numerous small holdings, woodland and other building sites, small residences and cottages, the total area extending to 1,084 acres.

Light Constructional Work.

We have received from Messrs. H. C. Davis and Co., Ltd., of No. 1, The Pavement, Clapham Common, S.W.4, a copy of a new illustrated list of light constructional work. Subjects particularly dealt with include:—Fire-escape staircases, spiral and ornamental stairs, wrot-iron railing and gates, lift enclosures, balconies, grilles, etc., etc., and such fixtures have been placed in, amongst other buildings, No. 10, Downing-street, Canterbury Cathedral, Army and Navy Stores, etc., etc. Messrs. Davis inform us that they are always glad to place their experience, manufacturing equipment, and the services of their experts at the disposal of architects.

A Wood Paving Contract.

We are informed that the new "Tungsec" patent wood paving has been accepted by the Holborn Borough Council, and will shortly be laid in Holborn-circus, etc., by Messrs. John Mowlem and Co., Ltd., who secured the contract in competition recently. The blocks are being manufactured and supplied by Messrs. Calders, Ltd., the sole licensees of the Tungsec Wood Paving Company. This paving was laid a year ago in the Holloway-road, for the Islington Borough Council, and Messrs. Calders, Ltd., have recently received a repeat order for further supplies of this system. The blocks have also been laid at Park-street, St. Pancras, about the same time, and have proved, we believe, thoroughly satisfactory. The inventor of this system is Mr. William J. Bennett, the managing director of the "Zeta" Wood Flooring Co. (1920), Ltd.

A Catalogue of Sanitary Ware.

Those architects and hospital and municipal authorities who cannot visit Messrs. Shanks & Co., Ltd.'s excellently laid out and appointed new showrooms at 81, Bond-street, W.1, will be greatly interested in a new catalogue, No. M.593, which this firm has lately produced. So highly specialised has the production of sanitary appliances become that the benefit to architects and others of having in one book a complete list of fittings for all classes of building, fully specified and for the most part illustrated, is inestimable. Every class of fitting is sectionised off for easy reference, and the inquirer can see at a glance illustration, specification and price of the article required. Messrs. Shanks are to be congratulated upon a publication which should be on every architect's reference shelf.

"Heating and Ventilating."

This is the title of a new catalogue (No. 1,124) which Messrs. Sturtevant Engineering Co., Ltd., have now issued. This publication deals chiefly with the Sturtevant combined Plenum system of heating and ventilating, but we understand that variations of this can be put forward in order to meet the special requirements of individual buildings. As architects are aware, particularly in public buildings, the combination of heating and ventilating in one plant is not always the best arrangement; but this does not mean that the Plenum system as such is necessarily abandoned, as an excellent modification can be adopted in such cases with beneficial results. This is described in the booklet, which contains, in addition, much information of great use to the architect. A copy may be obtained free from the company at 147, Queen Victoria-street, E.C.4.

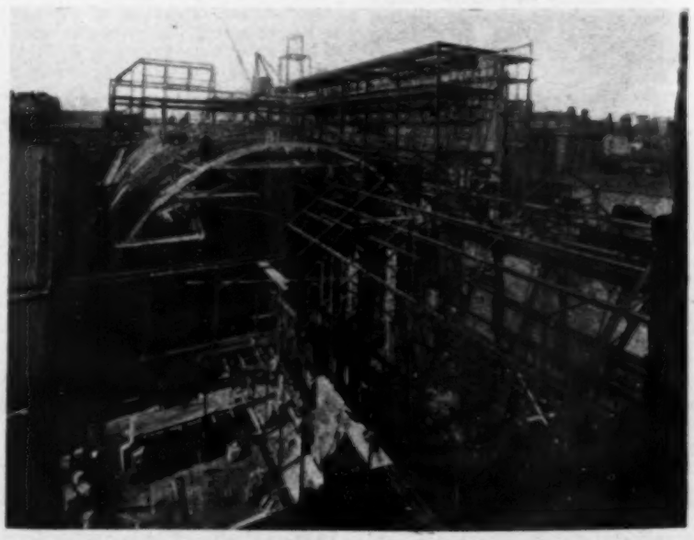
"Concrete Roads."

This is the title of a neatly produced brochure which has made its appearance from 20, Dartmouth-street, S.W.1. In this publication the British Portland Cement Association, Ltd., have dealt briefly with every type of road for which concrete is suitable, and chapters are devoted to arterial roads, town roads, private streets and estate roads, farm and rural roads, dock roads, works roads, car parks and tramway tracks. One section deals with concrete roads in extreme conditions; reference is made to a road laid at an altitude of 1,300 ft. above sea level and a road laid in tidal water, whilst examples of concrete roads constructed on bogs are also given. In a chapter dealing with gradients, examples are quoted of cement-bound roads on gradients of 1 in 5 and concrete roads on gradients of 1 in 10. This book, which is profusely illustrated, and which shows the great increase in construction over the past 16 years, should be of great value to any who are interested at all in road work. A copy will be sent free of charge on request.

Handbook on Reinforced Concrete.

"To the Foreman of the Job" is the title of an interesting and useful booklet just issued by the Trussed Concrete Steel Co., Ltd., reinforced concrete engineers, of 22, Cranley-gardens, South Kensington. As stated on the cover, the booklet contains "useful information for the better execution of reinforced concrete," and it is, in fact, likely to prove most useful to those responsible for the supervision of this form of construction. The information and instructions given are based on the Trussed Concrete Steel Co.'s own experts' experience of reinforced concrete construction, over a period of 25 years. Aggregates, proportions, tables of weights and measurements and information concerning various phases of construction from start to finish are all given, and space is also provided for working memoranda.

The Trussed Concrete Steel Co. will be glad to forward a copy to those whose duties bring them into contact with the many questions covered by the handbook.



Roofs of New Public Baths, etc., Westminster.

MESSRS. A. W. S. AND K. M. B. CROSS, Architects. (*See page* 867.)

RATES OF WAGES IN THE BUILDING TRADE

[Every endeavour is made to ensure accuracy, but we cannot be responsible for errors.]

	Masons.	Bricklayers.	Carpenters Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Labourers.
Aberdare	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Accrington	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Aldershot	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11
Alfreton	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Alnwick	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1
Altrincham	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Ashford (Kent)	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11
Ashington	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Ashton-under-Lyne	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Aylsham	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Banbury	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0
Barnsley	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Barnstaple	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Barrow-in-Furness	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Barry	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Basingstoke	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0
Bath	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Bedford	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Berwick	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Bexhill	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Birkenhead	1/8½	1/8½	1/8½	1/9½	1/8½	1/8½	1/8½	1/3½
Birmingham	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Bishop Auckland	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2½
Blackburn	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Blackpool	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Bognor Regis	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Bolton	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Bournemouth	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Bradford	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Bradford-on-Avon	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Braintree	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Brentwood	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Bridgwater	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0
Bridlington	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Brighton	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Bristol	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Bromsgrove	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Bromyard	1/3	1/3	1/3	1/3	1/3	1/3	1/3	11½
Bungay	1/2½	1/2½	1/2½	1/2½	1/2½	1/2½	1/2½	11
Burnley	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Burton-on-Trent	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Bury	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Buxton	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Cambridge	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Canterbury	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0
Cardiff	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Carlisle	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Chatham	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Chelmsford	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Cheltenham	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Chester	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Chesterfield	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Chorley	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Cirencester	1/4	1/4	1/4	1/4	1/4	1/4	1/3	1/0
Clacton	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Colchester	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Coventry	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Cranbrook	1/2½	1/2½	1/2½	1/2½	1/2½	1/2½	1/2½	11
Crewe	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Cromer	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Darlington	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Deal	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0
Denbigh	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Derby	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Devizes	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/2½	11½
Dewsbury	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Doncaster	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Dorchester	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/2½	11½
Dorking	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Dovercourt	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Driffield	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Droitwich	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Dudley	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Durham	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Eastbourne	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
E.Glam. (Mon. Val.)	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Ely	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Exeter	1/6	1/6	1/6	1/6	1/6	1/6	1/5	1/1½
Exmouth	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0
Fakenham	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Felixstowe	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/0½
Folkestone	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0
Frome	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/2½	11½
Glossop	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Gloucester	1/6	1/6	1/6	1/6	1/6	1/6	1/5	1/1½
Godalming	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Goole	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Gosport	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Grantham	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Great Yarmouth	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Grimsby	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Guildford	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Halifax	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Harpenden	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Harrogate	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Hartlepools	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Harwich	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Hastings	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0
Hatfield	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Holmesford	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Hereford	1/5	1/5	1/5	1/5	1/5	1/5	1/4	1/0½
Herne Bay	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11
Hertford	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/0½
Hitchin	1/4½	1/5	1/5	1/5	1/5	1/5	1/4½	1/0½
Hoddesdon	1/5	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Hull	1/2½	1/5	1/5	1/5	1/5	1/5	1/5	1/0½
Huddersfield	1/7	1/2½	1/2½	1/2½	1/2½	1/2½	1/2½	11
Hull	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Hunstanton	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Huntingdon	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0
Isle of Wight	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Ipswich	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Keighley	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Kettering	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Kidderminster	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/0
King's Lynn	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0
Lancaster	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½

	Masons.	Bricklayers.	Carpenters Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Labourers.
Leamington Spa	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Leeds	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Leicester	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Leighton Buzzard	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Lichfield	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Lincoln	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Littlehampton	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0½
Liverpool	1/8½	1/8½	1/8½	1/9½	1/8½	1/8½	1/8½	1/3½
Llandudno	1/5½	1/5½	1/5½	1/6½	1/5½	1/5½	1/5½	1/1½
Llanelly	1/7*	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
London:								
12 m. radius	1/8½	1/8½	1/8½	1/8½	1/8½	1/8½	1/7½	1/3½
12-15 m. radius	1/8	1/8	1/8	1/8*	1/8	1/8	1/7	1/3
Loughborough	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Lowestoft	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Luton	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Macclesfield	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Maidstone	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Malvern	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Manchester	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Mansfield	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Margate	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0
Market Harb'rough	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Matlock	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Melton Constable	1/2½	1/2½	1/2½	1/2½	1/2½	1/2½	1/2½	11
Melton Mowbray	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Merthyr Tydfil	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Middlesbrough	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Newark	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Newbury	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0*
Newcastle-on-Tyne	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Newcastle-u-Lyme	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
New Forest	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0
Newmarket	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Newport, Mon.	1/7	1/7	1/7	1/7*	1/7	1/7	1/7	1/2½
Northampton	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Norwich	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Nottingham	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Nuneaton	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Oakham	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/0½
Oldham	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Oxford	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Paignton	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Peterborough	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Plymouth	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Pontypridd	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Portsmouth	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Preston	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Ramsgate	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0
Reading	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Redcar	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Redditch	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Reigate	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/0½
Retford	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Ripon	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Rochdale	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Rochester	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Rugby	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Saffron Walden	1/3	1/3	1/3	1/3	1/3	1/3	1/3	11½
St. Albans	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
St. Helens	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Sawbridgeworth	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Saxmundham	1/3	1/3	1/3	1/3	1/3	1/3	1/3	11½
Scarborough	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Sevenoaks	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Sheffield	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Shrewsbury	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Sittingbourne	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Southampton	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Southend-on-Sea	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Southport	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
South Shields	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Stevenage	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Stockport	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Stockton-on-Tees	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Stoke-on-Trent	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Stourbridge	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Stourport	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Stowmarket	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Stratford-on-Avon	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Stroud	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Sunderland	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Swaffham	1/2½	1/2½	1/2½	1/2½	1/2½	1/2½	1/2½	11
Swansea	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Swindon	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/2
Tamworth	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Taunton	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Thetford	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Torquay	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Totnes	1/5	1/5	1/5	1/5	1/5	1/5	1/4½	1/0½
Trowbridge	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/2½	11½
Tunbridge Wells	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/0½
Uttoxeter	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Wakefield	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Walsall	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Walsden	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Warminster	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/2½	11½
Warrington	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Warwick	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Wells (Norfolk)	1/2½	1/2½	1/2½	1/2½	1/2½	1/2½	1/2½	11
Welwyn Gar. City	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
West Bromwich	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Weston-sup-Mare	1/5	1/5	1/5	1/5	1/5	1/5	1/5	1/0½
Weymouth	1/4	1/4	1/4	1/4	1/4	1/4	1/3	1/0
Whitby	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Wigan	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Winchester	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/4½	1/0½
Windsor	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Wisbech	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Wolverhampton	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Woodbridge	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	1/3½	11½
Worcester	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Worksop	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Worthing	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/0
Wrexham	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Wycombe	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/5½	1/1½
Wymondham	1/3	1/3	1/3	1/3	1/3	1/3	1/3	11½
York	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½

* The rate recognised by the National Association of Plasterers, Granolithic and Cement Workers, is 1/11½ per hour.

For Building Trade wages in Scotland, see page 881.

CONTRACTS, COMPETITIONS, &c.

For some contracts still open, but not included in this List, see previous issues. Those with an asterisk are advertised in this number. Certain conditions beyond those given in the following information are imposed in some cases, such as that advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed, that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given is the latest date when the tender, or the names of those willing to submit tenders, may be sent in, the name and address at the end is the person from whom or place where quantities, forms of tender, etc., may be obtained.

Following is a list of abbreviations:—Borough Surveyor, B.S.; Borough Engineer, B.E.; District Surveyor D.S.; Clerk, C.; Town Clerk, T.C.; County Engineer, C.E.; County Surveyor, C.S.; County Architect, C.A.; Surveyor, S.: Engineer, E.: Borough Architect, B.A.: Architect, A.

BUILDING, PAINTING, ELECTRIC LIGHTING, HEATING, etc

MAY 5.

Altrincham. — Conveniences, — Sanitary conveniences and shelter in Stamford-pk., for U.D.C. H. E. Brown, S.

Ashton-in-Makerfield. — Alterations. — To Brian Boru Club. Secretary, 57, Bryn-st.

Boston.—Foundation.—Foundation works for special towers carrying 33 kv. transmission lines over River Witham, for Central Electricity Board. R. H. Fox, secretary, Trafalgar-buildings, Charing Cross, W.C.2. Dep. £2 2s.

Clitheroe.—School.—Erection of Chatburn-rd. Council school, for T.C. A. R. Bleazard, B.E. Dep. £2 2s.

Crewe.—New School.—Erection of, for the E.C. Director of Education, Municipal-buildings. Dep. £5 5s

East and West Flegg.—Houses.—Caister, 8 and 3 pairs; Martham, 3 pairs; Billockby, 1 pair; Rollesby, 1 pair; Filby, 5; Ormesby St. Margaret, 5; West Somerton, 1 pair; Stokesby, 1 pair, for R.D.C. R. G. Ferrier, clerk, 5, Queen-st., Great Yarmouth. Dep. £1.

Edinburgh.—Painting.—New Secondary school building, for Leith Academy, for E.C. Reid & Forbes, architects, 7, Ainslie-place.

Edinburgh.—Painting.—Demonstration school, for National Committee for Training of Teachers, Edinburgh Provincial Committee. F. Wood, architect, 73, George-st.

Ellesmere Port and Whitby.—Houses.—232, on Rossmore-rd. estate, for U.D.C. S.

Erith.—Repairs.—Also redecorations, 2, High-st., for U.D.C. H. Hind, E. and S.

Glasgow.—Installation.—Of heating at Bankhead school, Knightswood, for E.C. Education Offices (Property Department), 129, Bath-st., Glasgow. Dep. £1 1s.

Radstock.—Installation.—Of central heating at Victoria Hall and offices, and relaying billiard room and hall floors, and alternatively for machine planing the hall floor, for U.D.C. E. Stockdale, S.

Ramsey.—Painting.—Exterior to 27 pairs of houses at Avenue, for U.D.C. R. F. Serjeant, clerk.

***Stockport.**—New Showrooms.—For the Gas Department. Halliday & Agate, 14, John Dalton-st., Manchester. Dep. £1 1s.

Swansea.—Goods Warehouse.—Erection of, for the G.W.R. F. R. E. Davis, Secretary, Paddington Station, W.2.

Tredegar.—Houses.—30 non-parlour, for U.D.C. W. Edgar Jones, Architect to Council, Rivolt Park-row. Dep. £2.

Wallasey.—Houses.—92 non-parlour type on Housing Scheme No. 9, Oakdale-rd. site. C.B. B.E. and S. Dep. £2 2s

Whitchurch (Glam.).—Fencing.—Roads and foot-paths, boundary fences, office buildings, etc., in connection with proposed cemetery, for P.C. M. Rowlands, clerk, Bishops-rd. Dep. £2 2s.

MAY 6.

Barnet.—Flats.—30 tenements on Wellhouse estate, for U.D.C. S. Dep. £3 3s.

Dover. — Painting. — Also decorating works various public buildings, fences, etc., for Corporation. B.E., Maison Dieu House.

Edinburgh.—Additions.—To Bellevue Technical and Commercial School, for E.C. J. A. Carfrae, architect, 3, Queen-st.

Liverpool.—Renovations.—After fire, at Plumpfields sub-station, Vauxhall-rd., for T.C. Land Steward and Surveyor.

Plymouth.—Flats.—10, New-st., for T.C. J. Wibberley, City Engineer and Architect, Sun-buildings. Dep. £3 3s.

Reigate.—Painting.—Of sprinklers and other ironwork, together with certain buildings at sewage disposal works, Earlswood, for T.C. B.S.

Scunthorpe. — Additions. — To Henderson-av. school, for Lindsey E.C. H. G. Gamble, F.R.I.B.A., County Architect, Bank-street-chams., Lincoln. Dep. £2 2s.

South Dublin.—Cottages.—48 labourers' cottages, for R.D.C. G Gallagher, clerk, 1, James's-st., Dublin.

Tonbridge.—Houses.—24, in Baltic-rd., for U.D.C. W. L. Bradley, Housing Architect, The Castle. Dep. £2 2s.

MAY 7.

Athy.—Houses.—Twelve 4-roomed houses of C.7 type, and 24 4-roomed houses of No. 1 type, on Gaol Field site, and fencing, sewerage and roadway; 9 4-roomed houses of No. 1 type, on Woodstock-st. site, and fencing and sewer connections; 14 4-roomed houses of G.1 type, on Rigney's Field, and fencing and sewerage, for U.D.C. J. W. Lawlor, T.C. Dep. £10 10s.

Birmingham.—Painting.—Exterior of certain buildings at Romsley Hill Sanatorium, near Halesowen, for T.C. F. H. C. Wiltshire, T.C. Dep. £1 1s.

Blackrock.—Houses.—36 semi-detached houses at Carysfort-av., for Civil Service Housing Association, Ltd. T. J. Flynn, secretary, 19, Upper Merrion-st., Dublin. Dep. £2 2s.

Bromley.—Redecoration.—Also repairs to dwellings at Council's housing estate at Bromley Common, for T.C. B.E.

Cove (Hants).—Alterations.—Also decorations at Cove Ivy Leaf Club, Ltd., Cove. Secretary.

Coventry.—Building.—High-class pumping station building on property at Brownshill Green, for Corporation. H. Lapworth, engineer, 25, Victoria-st., Westminster, S.W.1.

Edinburgh.—Painting.—External and internal of byres and dairy at Farm Steading, also external of houses in Dechmond Village, at Bangour Mental Hospital, for District Board of Control. W. M. Mowat, clerk, Castle-ter.

Glasgow.—Installation.—Of electric lighting at Carnwadric housing scheme, for Corporation. General Manager, 75, Waterloo-st., Glasgow, C.2.

Littlehampton.—Railings.—Provision and fixing or approx. 950 ft. lin. of iron railing on east bank of River Arun at mouth of Harbour, for U.D.C. L. B. Beresford, clerk.

Sheffield.—Houses.—26 parlour type on Dykes Hall estate building scheme No. 5, and 18 parlour type on Longley Estate, building scheme No. 19, for T.C. W. Geo. Davies, F.R.I.B.A., City Architect. Dep. £2

Warrington.—Sanitary Fittings.—At three conveniences, for T.C. B.S. Dep. £2 2s

Wembley.—Pavilion.—Timber sports pavilion and dressing rooms at Vale Farm Sports Ground, Watford-rd., Sudbury, for U.D.C. C. R. W. Chapman, E. and S. Dep. £1 1s.

Willesden.—Decorations.—At 93, Cambridge-rd., N.W.6, for U.D.C. F. Wilkinson, E.

Winchester.—Cottages.—4 at Twyford, 2 at Compton, 2 at Headbourne Worthy, 6 at King's Worthy, 12 at Martyr Worthy, and 6 at Easton, for R.D.C. Haynes, Johnson & Ebbs, chartered architects, 95a, High-st., Winchester.

MAY 8.

Bexhill.—Tower, etc.—Drill and hose tower, 50 ft. high and 9 ft. square, in Town Hall-yd., for T.C. W. Pearce, B.S. Dep. £1 1s.

Buckingham.—Demolition.—Also removal of "The Old King's Head" p.h. in Moreton-rd., for Bucks C.C. E. Winfield, C.E., Aylesbury.

Cuckfield.—Cottages.—4 cottages in College-rd., Ardingly, for R.D.C. A. L. Robinson, S. Dep. £2 2s.

Flintshire.—Painting.—Various schools, for E.C. R. G. Whitley, County Architect and Surveyor, Mold.

Kirkcaldy.—Houses.—32 three-roomed, 16 two-roomed houses at East Wemyss-Rosie site, for D.C. G. B. Deas, architect, Central-chams.

Leeds.—Garage.—At Kirkstall-rd. highways depot, for T.C. Highways Engineer, 155, Kirkstall-rd., Leeds.

Manchester.—Shelter.—Ladies' dressing shelter at Platt Fields, for T.C. City Architect. Dep. 10s. 6d.

Southampton.—Warehouses.—Town Quay, for Harbour Board. E. Cooper-Poole, engineer, Harbour Offices, Town Quay. Dep. £1.

***Wallasey.**—New Workshops.—Erection of, for the Corporation, Town Clerk, Town Hall. Dep. £2 2s.

***Winchmore Hill.**—Tea Room.—Erection of, at Grovelands Park, for the Southgate U.D.C. Clerk to the Council, Town Hall, Palmers Green, N.13 Dep. £2.

Wyllie (Mon).—Chapel.—Wesleyan Chapel at Wyllie Village, Mon, for Committee. A. F. Webb, L.R.I.B.A., architect and surveyor, Tredegar-chams., Blackwood, Mon. Dep. £2 2s.

MAY 9

Barking.—Extensions.—To Park Modern school, for E.C. C. J. Dawson, F.R.I.B.A., Clock House-chams., Barking. Dep. £2 2s.

Erith.—Repairs.—At electricity station, High-st., Erith, for U.D.C. H. Hind, E. Dep. £1 1s.

Stapleford.—Houses.—Erection, drainage, etc., of 8 non-parlour type houses on Cow-lane site, for R.D.C. G. C. Hardy, architect, 11, Church-st., Stapleford. Dep. £2 2s.

Truro.—Residence.—At Chapel-hill. A. J. Cornelius, F.R.I.B.A., architect, Truro.

MAY 10.

Alton.—Building.—New hospital block and covered way and alterations to existing buildings, and preparation of site and construction of foundations for same, for Alton Joint Hospital Committee. G. H. Webb, S., Town Hall, Alton. Dep. £1 1s.

Bainbridge.—Alterations.—To "Rose and Crown" hotel. G. W. Kirkley, "Rose and Crown" hotel.

Caterham and Warlingham.—Houses.—36, on Stafford-rd. site, adjoining Croydon-rd., Caterham Valley, for U.D.C. E. and S. Dep. £3 3s.

Methley.—Houses.—18 scullery type, on site in Mickletown area, for U.D.C. T. Thompson, architect, Red House.

Nottingham.—Chapel.—In Nuthall-rd., Cinderhill, for Trustee of Primitive Methodist Chapel. Booker & Shepherd, architects, Albion-chams., King-st. Dep. £2 2s.

MAY 12.

Bilston.—Installation.—Of electric light in Market Hall, for U.D.C. Moffett, Rosher & Mann, consulting engineers, Union-chams., Temple-row, Birmingham. Dep. £3 3s.

Brentford.—Footbridge.—Erection of, in Boston Manor Park, for U.D.C. Clerk of the Council, Town Hall, Chiswick, W.4.

Chelmsford.—Bungalows.—4 semi-detached at Great Leighs, for R.D.C. J. Dewhirst, E. and S.

Chiswick.—Two Conveniences.—Erection of, in Chiswick House Grounds for U.D.C. Clerk to the Council, Town Hall.

Edinburgh.—Painting.—Various buildings, for E.C. John Stewart, Executive Officer, Education Offices, Castle-terr.

Epsom.—Extension.—Offices at electricity works, Depot-rd., for U.D.C. A. C. Williams & Pettett, architects, Reid's-building, Ashley-rd. Dep. £2 2s.

Hailsham.—Houses.—6, at Polegate, for R.D.C. W. O. Humphery, E. and S. Dep. £1 1s

Rawtenstall.—Houses.—12 3-bedroom non-parlour type at Burnley-rd., Lumb-in-Rossendale, for T.C. B.S. Dep. £2 2s.

Sleaford.—Houses.—4 workmen's dwellings, Martin Fen, near Dales Head Bridge, for R.D.C. E. H. Sills, architect.

Sunderland.—Houses.—90 4-roomed at Ford estate, for C.B. B.E. Dep. £2 2s.

MAY 13.

Peterborough.—Houses.—47, adjoining St. Paul's-rd., for T.C. W. H. A. Court, City E. and S. Dep. £2 2s.

Rampton. — Installation. — Low pressure hot water heating, hot water services and fire service at Rampton State Institution, for H.M.O.W. Contracts Branch, H.M. Office of Works, King Charles-st., S.W.1. Dep. £1 1s.

MAY 14.

Carlow.—Extension.—To Mental Hospital, for District Mental Hospital Committee. William P. Hade, Carlow. Dep. £3 3s.

London. — Conveniences. — Above-ground conveniences on vacant land on east side Clapton Common, near Spring-hill, and Urswick-rd., at rear of 26-28, Lower Clapton-rd., for Hackney B.C. P. Holt, B.E. and S. Dep. £1 1s. each.

Manchester.—School.—Mauldeth-rd. municipal school, Withington, for E.C. Education Offices, Deansgate. Dep. £2 2s.

Orsett.—Houses.—22, together with demolition of certain existing property, for R.D.C. G. F. Andrassy, E. Dep. £1 1s.

Stoke-on-Trent.—Repairs.—To houses at Hanley, for T.C. E. B. Sharpley, T.C.

MAY 17.

Staffordshire. — Building. — Fazeley Mile Oak Junior Mixed Council school, erection and completion of new school for 300 children, and Pelsall Senior Mixed Council school, erection and completion of additional classrooms, assembly hall, etc., for E.C. F. A. Hughes, Director of Education, County Education Offices, Stafford. Dep. £4 4s. each.

Wing.—Repairs.—Water and drainage and general repairs and decoration, at almshouse, Dormer's Hospital. C. W. Fisher, chairman, Wing Vicarage.

MAY 19.

Chesterfield.—Additions.—To Derby-rd. girls' and Derby-rd. infants' school, Church-st., and Derby-rd. boys', Jawbones-hill, for T.C. Wilcockson & Cutts, architects, 12, Saltergate. Dep. £2 2s.

Hull.—Painting.—Orphanage, Hessleswood, for Seamen's and General Orphanage. Townley Truman, secretary, Hessleswood, Hessle

London.—Extensions.—Also alteration public conveniences on Victoria-embankment near Westminster Bridge, for L.C.C. Chief Engineer, The Old County Hall, Spring-gardens, S.W.1. Dep. £1.

London.—Foundations.—Construction of site works, foundation works and buildings in area of South East England Electricity Scheme (London Area), for Central Electricity Board. R. H. Fox, Secretary and Solicitor, Trafalgar-buildings, 1, Charing Cross, W.C.2. Dep. £2 2s.

Stalybridge.—Building.—General builders' work in superstructure, comprising concrete suspended floors, brickwork, joiner's work, etc., required in Hartshead power station, for Stalybridge, Hyde, Mossley and Dukinfield Tramways and Electricity Board. W. H. George & Son, architects, 7, Warrington-st., Ashton-under-Lyne. Dep. £2.

MAY 20.

Bangor.—Convenience.—At Garth, for T.C. D. Price Davies, B.S. Dep. £2 2s.

Manchester.—Alterations.—To form young people's room at Cheetham Library, for T.C. City Architect. Dep. 10s. 6d.

MAY 21.

Finchley.—Decorations.—Also other works at Council's schools, for U.D.C. Percival T. Harrison, E., 9, The Hawthorns, Church End, Finchley, N.3. Dep. £1 1s.

Kingston-upon-Hull.—Stairway.—Builder's work in connection with stairway adjoining Craven-st. Slope, for T.C. T. Thomas, City E.

MAY 22.

Bristol.—Painting.—Cleaning and repainting station buildings, etc., at Bristol Joint Station, for G.W.R. Engineer, Bristol (Temple Meads) Station

Cardigan.—Chapel.—Repair of structure of Hope Chapel. W. M. H. Williams, secretary, "Ragleth."

Pangbourne.—Painting.—Cleaning and repainting station buildings at Tilehurst, for G.W.R. Engineer, 7, Eastbourne-ter., Paddington, W.2.

MAY 23.

St. Albans.—School.—Elementary school to accommodate 200 scholars at London Colney, near St. Albans, for Herts C.C. A. E. Prescott, County Surveyor and Architect, Hatfield. Dep. £3 3s.

MAY 24.

Ilford.—Houses.—Erection of 146 at the Fencepiece-rd. Housing Estate, Barkingside, for T.C. Town Clerk, Town Hall, Ilford. Dep. £5 5s.

Pelsall.—Installation.—Of electric light in existing infants' council school, Pelsall, near Walsall, for Staffordshire E.C. Moffett, Rosher & Mann, consulting engineers, Union-chams., Temple-row, Birmingham. Dep. £5 5s.

JULY 15.

Egypt.—Building.—Erection in Northern Nile Delta, fifteen electric pumping stations with necessary building work, machinery and accessories, for Mechanical Department, Ministry of Public Works. Chief Inspecting Engineer, Egyptian Government, 41, Tothill-st., S.W.1. Charge £10 5s.

NO DATE.

Buxton.—Shop.—Shop and store at Harpur Hill, for Whaley Bridge and Buxton Co-operative Society, Ltd. C. Flint, architect and surveyor. Dep. £1 1s

Cardiff.—Building.—Ferro concrete work for completion of Graham-buildings, Newport-rd. H. Budgen, F.R.I.B.A., & Co., architects, 95, St Mary-st. Dep. £2 2s.

Chard.—Houses.—Misterton, 2 pairs, and Ilton, 3 pairs, for R.D.C. Symes & Madge, architects, Somerset House.

Chesterfield.—Hall.—Small meeting hall in Storforth-lane, for Hasland adult school. P. B. Houfton & Co., architects, Market-place, Chesterfield

Doncaster.—Painting.—Also roof tiling, plastering, plumbing, painting Central school, for Committee. H. M. Nowell, Ltd., Bank-chams., Stockton-on-Tees.

Edgeworthstown. — Reconstruction. — Of Clonbroney Church, Edgeworthstown, Co. Longford, for Rev. P. Markey, P.P. R. M. Butler, A.R.H.A., F.R.I.B.A., architect, 82, Merrion-sq. South, Dublin.

Guiseley.—Houses.—Pair of houses and cafe and restaurant at Birks. Chippindale and Sunderland, architects.

Halifax. — Alterations. — Also extensions to pavilion at Thrum Hall, for Trustees of Thrum Hall Estate. Hinchliffe & Co., architects, Tower-chams., Silver-st.

Lostwithiel.—Bungalow.—At Bridgend. J. Keast, Milliham, Bridgend, Lostwithiel.

Norfolk.—Repairs.—New works, repairs and adaptations, on Council's small holdings throughout the county, for C.C. T. G. Ellis, County Land Agent, 27, Thorpe-rd., Norwich.

Oswestry.—Extensions.—To boys' high school, for Salop E.C. A. G. Chant, A.R.I.B.A., County Architect, 5, Belmont, Shrewsbury. Dep. £2 2s.

Sauchie.—House.—Headmaster's house at Beechwood, Sauchie, for Clackmannan County E.C. J. Melvin & Son, architects, Mar-st., Alloa.

MATERIALS, etc.

MAY 5.

Hampton Wick.—Granite Chippings, etc.—For U.D.C. H. Fawssett, clerk.

Litherland.—Refined Tar.—For U.D.C. G. Ponefford, E. and S.

MAY 6.

Inverness.—Cement.—For District Asylum. R. Gilbert, clerk, District Board of Control, 20, Church-st.

MAY 9.

Derby.—Highway Materials.—For C.B. E. H. Bennett, B.S., 15, Tenant-st.

MAY 12.

Egypt.—Cement.—For Main Drainage Department, Ministry of Public Works. Department of Overseas Trade, 35, Old Queen-st., S.W.1. (Ref. B.X. 6336.)

MAY 13.

Manchester.—Bricks.—Common, engineering and facing bricks, for T.C. Housing Director.

MAY 13.

Richmond (Surrey).—Lime.—For Richmond Main Sewerage Board. W. Fairley, engineer, West Hall-rd., Kew Gardens.

MAY 17.

Birmingham.—Builders' Materials.—For T.C. T.C.

ENGINEERING, IRON AND STEEL

MAY 5.

Clutton.—Sewerage.—Sewers, disposal tanks, filter beds, etc., at Paulton, for R.D.C. W. T. Hawker, F., Carisbrook, Chard-rd., Heavitree, Exeter. Dep. £2 2s.

Winchcomb.—Water Supply.—6 miles of 4-in. and 3-in. water mains, also pumping station and reservoirs, together with other incidental works at Cleeve Hill, for R.D.C. Willcox & Raikes, engineers, 33, Great Charles-st., Birmingham. Dep. £5 5s.

MAY 6.

Glossop.—Pool.—Construction of paddling pool, at Ranksw ood recreation ground, for T.C. Geo. Faulds, B.S.

Surrey.—Improvements.—Burford bridge over River Mole, on London-Worthing main road, for C.C. C.E., Kingston-upon-Thames. Dep. £2 2s.

MAY 7.

Milford Haven.—Drainage.—Sewerage and sewer outfall works, for U.D.C. Sir Alex. Binnie, Son & Deacon, engineers, Artillery House, Artillery-row, Westminster, S.W.1. Dep. £10.

MAY 9.

Rothwell.—Water Supply.—Elevated steel tank and making of new connections to existing water mains, for U.D.C. Pick, Everard, Keay & Gimson, engineers, 6, Millstone-lane, Leicester. Dep. £1 1s.

MAY 10.

Chapel-en-le-Frith.—Water Supply.—Providing, laying and jointing of about 2,600 yds. of 4-in. cast-iron pipes, complete with sluice valves, hydrants, etc.; building small pump house and suction well, etc., for R.D.C. Brady & Partington, chartered civil engineers, Market-st. Dep. £3.

Dundee.—Building.—Reinforced concrete pump chamber in River Tay, under Eastern Wharf, together with construction of reinforced concrete piled foundation for circulating water pipe, approx. 515 ft. long, at Carolina Port, for T.C. D. H. Bishop, General Manager and Engineer, Electricity Supply Department, Dudhope Crescent-rd. Dep. £2 2s.

Rufford.—Reconstruction.—Of Spark Canal bridge, main ditch bridge, and necessary roadworks in Rufford, on Rufford to Chorley road A.581, for Lancashire C.C. County Surveyor and Bridgemaster, County Offices, Preston.

MAY 12.

Rochdale.—Widening.—Well I'th'-lane bridge, for C.B. B.S.

Woodford.—Extension.—Of Eastern sewage disposal works, for U.D.C. J. A. Simpson, clerk. Dep. £5.

MAY 13.

Nottingham.—Bridges.—2 bridges over L.M. & S. Rly. and the River Leen, for T.C. T. Wallis Gordon, City E. and S. Dep. £1 each.

MAY 14.

Gosport.—Sewer.—7,250 yds. of main sewer in Gomer-lane, Military-rd., Fareham-rd., Wych-lane, etc., together with various house connections thereto, and a new ejector station, for T.C. A. Barlow, B.E. Dep. £2 2s.

Rickmansworth.—Sewerage Works.—At Claypit-lane, for U.D.C. S. Dep. £2 2s.

MAY 15.

Devizes.—Reservoir.—Concrete reservoir, Bishops Cannings, for Water Dept. C. G. Barrett, the Gas and Water Engineer, Northgate-st. Dep. £3 3s.

MAY 16.

Halifax.—Reservoir.—Reconditioning of Warley Moor or "Fly Flat" reservoir, Luddenden Brook, for C.B. G. H. Hill & Sons (Manchester), civil engineers, 40, Kennedy-st., Manchester. Dep. £5 5s.

MAY 17.

Gosport.—Repairs.—Repairing floating landing stage and brow connecting it with shore, and other contingent works, for T.C. Sir John Wolfe Barry & Partners, engineers, Dartmouth House, 2, Queen Anne's-gate, Westminster, S.W.1. Dep £5 5s.

Heywood.—Tank.—Concrete detritus tank at Botany sewage disposal works, for T.C. James Diggle & Son, engineers, Hind Hill-st. Dep. £2 2s.

Uckfield.—Sewage.—One mile of sewers from 6 in. to 10 in. dia., and sewage disposal works, comprising pumping station, settling tanks, filters, sludge tanks and other accessories, for U.D.C. W. C. Easdale, engineer, 1, Victoria-st., S.W.1. Dep. £5.

MAY 19.

Thrapston.—Sewage Outfall Works.—At Lowick, for R.D.C. Clerk.

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MAY 21.

Westmorland.—Bridge.—Over River Lune at Kirkby Lonsdale in ferro-concrete, with freestone parapet walls, for C.C. County Surveyor and Bridgemaster, 12, Lowther-st., Kendal. Dep. £25.

MAY 24.

Midsomer Norton.—Sewage Disposal Works.—For U.D.C. S. Dep. £2 2s.

MAY 26.

East Riding.—Bridge.—Steel bridge and approaches, for C.C. Howard Humphreys & Sons, consulting engineers, 28, Victoria-st., Westminster, S.W.1. Dep. £5 5s.

MAY 29.

Southwell.—Sewerage.—Laying of approx. 2,750 yds. of 9 in. and 1,230 yds. of 6 in. stoneware pipe sewers, construction of pumping station, and two additional percolating filters at disposal works at Ollerton and Boughton, for R.D.C. Sands & Walker, consulting engineers, Milton-chams., Nottingham. Dep. £4 4s.

St. Thomas.—Mains.—4,014 yds. of 4 in. and 3 in. dia. cast-iron mains, with necessary valves, hydrants, etc., also pumping station, machinery and concrete reservoir, etc., at Lympstone, for R.D.C. H. G. Hoskings, E., 6, Queen Anne's Gate, Westminster, S.W.1. Dep. £5.

JUNE 1.

Benha (Egypt).—Bridge.—Steel bridge, and demolition of existing bridge, over Nile, for Ministry of Communications, Administration of Bridges and Roads. Department of Overseas Trade, 35, Old Queen-st., S.W.1. (Ref. A.X. 9222.)

JUNE 4.

Windlesham.—Sewerage.—6,300 yds. of 7 in. cast-iron rising main and 3,700 yds. of 12 in., 9 in. and 6 in. cast-iron and stoneware pipe sewers, together with pumping station and other incidental works, for U.D.C. Willcox & Raikes, engineers, 33, Great Charles-st., Birmingham. Dep. £5 5s.

ROAD, SEWERAGE, AND WATER WORKS

MAY 5.

Biggleswade.—6,500 lin. yds. of 9-in diameter cast-iron pipes, with valves and accessory works, for Water Board. Sir Alex. Binnie, Son & Deacon, engineers, Artillery House, Artillery-row, Westminster, S.W.1. Dep. £5.

Cheadle.—Drainage Work.—At certain properties within district, for U.D.C. J. T. Fernley, Sanitary Inspector.

Erith.—Making-up.—In reinforced concrete of approx. 3,333 super yds. of carriageway in Abbey-rd., Abbey Wood, for U.D.C. H. Hind, E. and S. Dep. £1 1s.

Glasgow.—Surfacing.—Asphalt surfacing parts of both carriageways of section between Glasgow and Baillieston of new road from Glasgow to Edinburgh, for T.C. D. A. Donald, engineer, 271, Alexandra-parade, E.1. Dep. £10 10s.

Grimsby.—Paving, etc.—330 yds. of main road, Scartho, for Corporation. H. Gilbert Whyatt, B.E and S. Dep. £1 1s.

Teddington. — Resurfacing. — Langham-rd., for U.D.C. E. Bostock, S. Dep. £2 2s.

MAY 6.

Buckhurst Hill.—Spraying.—About 40,000 yds. super. road surface with "tar" or "cold emulsion," for U.D.C. S.

Esher and Ditton.—Sewer.—1,100 yds. run of 9 in cast-iron pipe sewer at Arbrook Common and Copsem-lane, together with manholes and other works connected therewith, for U.D.C. S.

MAY 7.

Aston.—Making-up.—Part of Lozden-rd., and construction of about 50 yds. of 48 in. dia. concrete sewer, High-st., for T.C. Major W. G. Cross, B.S. Dep. £1 1s.

Birmingham.—Sewerage.—1,080 yds. of brick and concrete and cast-iron pipe sewer, at Perry Barr, for T.C. H. H. Humphries, C.E. and S. Dep. £2.

Rochdale.—Asphalt.—900 sq. yds. of granited rock asphalt in Sheriff-st., for Corporation. B.S.

Rochdale.—Paving.—Portion of Edmund-st., for Corporation. B.S.

Swansea.—Asphalt.—Supplying and laying about 80,000 sq. yds. of asphalt paving on carriageways and footways, for C.B. B.E. and S.

Ticehurst.—Tarring.—About 200,000 sq. yds. of highways, for R.D.C. V. Laurens, District S., Wadhurst.

Wembley. — Making-up. — Eton-av. (part 3), approx. length 300 yds., and Elmstead-av. (part 1), approx. length 340 yds., for U.D.C. C. R. W. Chapman, E. and S. Dep. £1 1s. each.

Wembley.—Making-up.—Part 1 and 2 of St. James'-gardens, for U.D.C. C. R. W. Chapman, E. and S. Dep. £2 2s.

MAY 8.

Leeds.—Paving.—Kerbing and paving in Church-lane improvement; kerbing, flagging, tar-paving footpaths, paving and tar macadamising Highbury Mount, Aviary-grove, Warrels-grove, Grosmont-rd., Woodlea-mount, Firth-grove, Cross Flatts-grove, Wooler-drive, Alberta-av., for T.C. E. W. Cockerlyne, Highways Engineer. Dep. £1 1s. each.

Luton.—Sewers.—Laying 9 in. dia. foul water sewers in Beechwood-rd. (part); Waller-av. (part); Wingate-rd.; and laying 9 in. dia. foul and storm water sewers, kerbing, channelling and carriageway foundations in Waller-av. (part), for T.C. J. W. Tomlinson, B.E. and S., 18, Upper George-st. Dep. £1 1s.

MAY 8.

London.—Repairs.—To Joint-rd., St. Pancras Cemetery, E. Finchley, for St. Pancras B.C. A. P. Coke, Deputy Town Clerk.

London.—Paving.—Of Chatfield-av. and Larpent-av., Putney, for Wandsworth B.C. E. J. Elford, B.E., 215, Balham High-rd., S.W.17. Dep. £1 1s.

Madron.—Sewer.—Reconcreting about 40 yds. of bed of Heamoor sewer at Chyandour Beach, for U.D.C. W. N. Matthews, Sanitary Inspector, 35, Richmond-st., Heamoor.

Mayo.—Tarring.—Spraying 60,000 sq. yds road from Doocaghany to Ballina, including streets of Ballina; approx. 150,000 sq. yds. road from Ballina, through Foxford, to Swinford; approx. 110,000 sq. yds. of road from Westport Quay to Castlebar Town; approx. 80,000 sq. yds. of rd. from Balla to Claremorris, including streets of both towns; approx. 130,000 sq. yds. of road from Claremorris, through Ballyhaunis, to Roscommon County boundary at Coolafarna, for C.C. T. P. Flanagan, C.S., Courthouse, Castlebar.

MAY 19.

Alton.—Sewer.—Sewerage and water, comprising approx. 46 yds. of 9 in. sewer, 700 yds. of 9 in. stoneware sewer, with manholes, etc., and 420 yds. of 3 in. water main, etc., for U.D.C. W. Bradley Trimmer, clerk. Dep. £1 1s.

MAY 12.

Brentford and Chiswick.—Road.—Roads and sewers on site of proposed housing scheme, approx. 23 acres in area, adjoining London-rd. and Syon-lane, Isleworth, for U.D.C. E. Willis, E. and S.

Chertsey.—Drainage.—In parts of parishes of Byfleet and Pyrford, for R.D.C. Capt. H. Beeney, E.

Sleaford.—Sewer.—66 yds. of open sewer with 9 in. pipes, at Aunsby, for R.D.C. E. H. Cills, E.

Watford. — Reconstruction. — Of footpaths of various roads in borough, for T.C. W. W. Newman, B.E. Dep. £2 2s.

MAY 13.

Glossop Dale.—Sewerage.—1,500 yds. sewers, together with manholes, etc., at Gamesley, for R.D.C. Brody & Partington, chartered civil engineers, Chapel-en-le-Frith. Dep. £5.

London.—Sewer.—768 ft. of 12 in. and 1,738 ft. of 9 in. glazed stoneware pipe surface water and soil sewers in Verdant-lane, Catford, for Lewisham B.C. B.S.

MAY 14.

Newbury.—Road, etc.—Removing earth, forming retaining walls and constructing about 136 yds. of entrance road, complete with kerbing and fencing, at Council houses, Midgham, for R.D.C. E. G. Hampshire, S., Wash Common, Newbury.

Turton.—Reconstructions.—Hardy Mill-rd., from Ruins-lane to near Hardy Mill, about 400 yds. in length, for U.D.C. V. W. Laithwaite, S.

West Sussex.—Tarring.—Surface tarring of part or whole of approx. 2,500,000 sq. yds. of county roads with refined tar, for C.C. H. W. Bowen, C.S., Chichester.

MAY 15.

Devizes.—Main.—Supply and laying of approximately 2,200 yds. of 9-in. rising main, for Water Dept. C. G. Barrett, gas and water engineer, Northgate-st. Dep. £3 3s.

Dublin.—Spraying.—Also gritting portion of Phoenix Park roads, for Commissioners of Public Works. T. Cassedy, secretary, Office of Public Works.

Enfield.—Making-up.—Of Alpha-rd., Ponders End, for U.D.C. H. R. Crabb, S. Dep. £2 2s.

London.—Making-up.—Athlone-rd. (part), Claverdale-rd. (part), Hillworth-rd., Mackie-rd., and Craignar-rd., for Lambeth B.C. Osmund Cattlin, B.E.

MAY 17.

Eccles.—Making-up.—Sewering, paving and making-up of 10 back streets and passages, for T.C. B.S. Dep. £1 1s.

Hale.—Making-up.—School-rd., approx. 900 sup. yds., for U.D.C. C. P. Higginbotham. Dep. £1 1s.

MAY 20.

Egham.—Making-up.—Of Clarence-rd. in reinforced concrete, for U.D.C. R. I. Weymouth, E. and S. Dep. £2 2s.

MAY 24.

Ilford.—Making-up.—Wanstead-lane, from Beehive-lane to Hill View-crescent, for T.C. L. E. J. Reynolds, B.E. and S. Dep. £2 2s.

MAY 27.

Cairo.—Mains.—Laying, jointing and testing of 14,530 metres of cast-iron spigot and socket pipes from 3 in. to 20 in. dia., together with specials and valves, for Ministry of Public Works. Department of Overseas Trade, 35, Old Queen-st., S.W.1. (Ref. A.X 9292.)

Public Appointments

MAY 8.

North Shields.—Clerk of Works (Temporary). Town Clerk, 14, Northumberland-square.

MAY 7.

***Louth, Lincs.**—Clerk of Works.—Town Clerk, Town Hall.

MAY 9.

Exeter.—Architectural Assistant. John Bennett, City Architect.

MAY 17.

Leeds.—Head of Building Department required, for the Technical College. Director of Education, Calverley-st.

PROPOSED NEW BUILDINGS & OTHER WORKS*

In these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works at the time of publication have been actually commenced. Abbreviations: T.C. for Town Council; U.D.C. for Urban District Council; R.D.C. for Rural District Council; E.C. for Education Committee; B.G. for Board of Guardians, B.C. for Borough Council; P.C. for Parish Council; M.H. for Ministry of Health; M.T. for Ministry of Transport; C.B. for County Borough; B. of E. for Board of Education. M.A.B. for Metropolitan Asylums Board; and M.W.B. for Metropolitan Water Board; Borough Surveyor, B.S.; Borough Engineer, B.E.; District Surveyor, D.S.; Clerk, C.; Town Clerk, T.C.; County Engineer, C.E.; County Surveyor, C.S.; County Architect, C.A.; Surveyor, S.; Engineer, E.; Borough Architect, B.A.; Architect, A.

Acton.—Cheshire C.C. in negotiation with Weaver Navigation Trust regarding reconstruction of bridge over Weaver at Acton Bridge. Cost £40,000.

Alsager.—U.D.C. has embarked upon a scheme for 22 houses, at £9,367. Tenders to be invited. H. V. Lynam, S.

Ardmore.—County Regional E.C. adopted plans for building school at Ardmore, at £1,518.—Lowest tender for building new school at Drumsollen, Armagh, at £1,150, been accepted.

Aylesbury.—T.C. agreed to make application to M.H. for sanction for £45,586 for 100 houses and laying of roads and sewers at California.

Barking Town.—U.D.C. received notice from L.M.S. Rly. of their intentions to invite tenders for widening Gale-st. bridge.

Barnet.—U.D.C. approved: Rebuilding "The Woodman" public-house, Oakleigh-rd. North, Watney, Combe & Reid, per Fermand & Petch, architects.

Bassaleg.—Monmouthshire E.C. propose new secondary school at Bassaleg. John Bain, F.R.I.B.A., architect to E.C. £40,000 estimated cost.

Bedford.—R.D.C. to erect eight Council houses at Wymington.

Bexleyheath.—The plans of the following new houses have been adopted by Bexley Council: New church and hall, west side of Pickford-lane, Bexley Heath, for the Vicar and Parochial Church Council of Bexley Heath; 6 houses and garages, Mennrd., Belle-grove, for the Derrick Construction Co.; extension to factory, Gravel-hill, Bexley Heath, for Meredith & Drew, Ltd.; lay-out of new road, Summerhill-rd., off Wickham-lane, and 44 houses therein, for W. Grubb; 6 pairs of houses, Shakespeare-rd., Bexley Heath, for T. F. Robinson; 6 houses, Dallin-rd., Bexley Heath, for Barnes & Bridge; 48 houses, Orchard-close, Pickford-lane, Bexley Heath, for D. C. Bowyer; 6 houses, Dartford-rd., Bexley, for E. J. Payne; 14 houses, Rochester-way, for T. Harrison & Co.; 32 houses, Loon-avenue, Belle-grove, for R. Perfect; 10 houses Honiton-rd., Welling, for J. Stevens & Son; development, Woolwich-rd., for Cox Bros.

Billington.—P.C. to erect Sunday School and parochial hall (vicar, Rev. J. Ford).

Bilsborrow.—A. C. M. Lillie, L.R.I.B.A., Bamber Bridge, near Preston, architect for village hall and institute, to cost £2,000.

Bolton.—E.C. to enlarge Tonge Fold Infants' School.

Bradford.—Plans for new fish market in James-st., Bradford, at £2,500, were approved. Corporation Markets and Fairs Committee.

Bradford.—Health Committee approved provisionally plans for two new operating theatres at St. Luke's Hospital.

Brodbury.—Plans been approved for extensions Romiley Wesleyan Church School.

Bridlington.—Alterations to premises of Neal & Son, Hilderthorpe-rd. Plans by J. R. Earnshaw, architect, Kingsgate.

Bridlington.—Ministry of Agriculture and Fisheries authorised Harbour Commissioners to invite tenders for harbour improvements, at £11,500.

Camborne.—Fox & Sons, architects, 45-50, Old Christchurch-rd., Bournemouth, prepared plans for five shops.

Cambridgeshire.—E.C. to erect a senior school to accommodate 240 boys and 240 girls. New senior school with accommodation for 120 boys and 120 girls at Chatteris. Extension of King Edward School at Chatteris. A Junior and Infants' School at Christ Church with 120 places, County Architect, R. D. Robson, A.R.I.B.A., Isle of Ely.

Cambridgeshire.—C.C. propose £121,020 educational scheme.

Cardigan.—T.C. passed: 12 s.-d. villas at Newtown, for Davies & Morgan.

Carlisle.—Cumberland E.C. accepted tender for £10,975 for new Council school at Longtown, and improvements to existing premises.—Negotiations between County and City authorities resulted in agreement to buy land for additional playing field accommodation for Carlisle and County High School for Girls.

Chesterfield.—Plans for extensions, St. James' Hall, Vicar-lane, been passed by Highways Committee. Wilcockson & Cutts, 12, Saltergate, architects.—B. of E. approved Tapton Hall for school purposes. Land to be acquired for extending Derby-rd. Girls' and Infants' School. Plans by Wilcockson & Cutts, 12, Saltergate.

Coventry.—Watch Committee recommend: Additional buildings at Pool Meadow motor omnibus station, at £1,575.—Public Health Committee recommend: Site on Pinley Estate for new infectious diseases hospital; provision be made for hospital of 150 beds; and that competitive designs be invited.

Coventry.—T.C. approved: Concert and billiard hall off Kenpas Highway, A. Turner; 56 houses, Siddeley-av., Ives & Rushby; alterations and additions machine shop, Humber-rd., Humber & Hillman, Ltd.; 8 houses, Conway-av., County Estate Building Co.; transformer house, Durbar-av., Riley (Coventry), Ltd.; office to low pressure shop, Holbrook-lane, Dunlop Rubber Co., Ltd.; extension of club premises, David-rd., Charterhouse Club; 3 houses with shops, Holbrook-lane, A. E. Gilks; 28 houses, Grenville-av., A. E. White; 5 houses, Gregory-av., T. Seal; extension of works, Durbar-av., Riley (Coventry), Ltd.; extension to sub-station, corner Binley-rd. and Gulson-rd., Corporation; 11 houses, Church-lane, F. G. Robinson; shop premises, Barras Heath, Coventry & District Co-operative Society, Ltd.; warehouse, Chapel-st., E. Laxon & Co., Ltd.; alterations, "Golden Cross" public-house, Northampton Brewery Co., Ltd.; alterations and additions to "Ivy Cottage" public-house, King William-st., Northampton Brewery Co., Ltd.; 24 houses, Siddeley-av., I. Colledge; 8 houses, Conway-av., J. W. McCutchion; 7 houses, Lavender-av., D. Taylor.

Croydon.—C.B. approved: T. A. Lewis, 2, Harewood-rd., alterations and additions, Purley Congregational Church, Brighton-rd.; F. W. Milton, 248, Brigstock-rd., 11 garages, 2 and 14-32, St. Oswald's-rd.; Truett & Steel, Ltd., High-st., Thornton Heath, additions to joinery works, 79, High-st., Thornton Heath; G. G. Stanham, 26-27, Bush-lane, E.C.4, alterations and additions, "The Wheatsheaf" p.-h., London-rd.; Taylor Bros., Barnoldswick, Lancs, 4 houses, 25-31, Ballards-way; J. B. & W. B. Hemmings, "Selwyn," Annandale-rd., 5 houses and garages, Addiscombe-rd.; M. Brown & Sons (Croydon), Ltd., Spring Park Farm estate, 29 houses, West-way; Borough Electrical Engineer, 38, High-st., extension to sub-station, Virginia-rd.; Borough Electrical Engineer, 38, High-street, sub-station, Walpole-rd.; Lloyds Bank, Ltd., 42-44, Gracechurch-st., E.C.4, alterations and additions, 212, Lower Addiscombe-rd.; Thomas & Son, Chipstead, 9 houses, Biggin-hill, 2 houses, Covington-gardens, 24 houses, Covington-way; H. Macintosh, East Croydon, 8 houses and 6 garages, Gibson's-hill; J. T. R. Wildman, 189, Regent-st., W.1, alterations and additions and factory buildings, Waddon-mills; United Dairies, Ltd., 27, High-st., S.E.25, distributing depot, 31, Westow-st., S.E.19; J. B. Farrugia, 46, Thomas-st., S.E.18, alterations and additions, 68, Westow-st., S.E.19; Paish, Tyler & Crump, 1, Addiscombe-rd., garage, 7, Eldon-av., garage, 15, Valley-walk, 4 garages, 14, 18, 22, 33, Barnfield-av.; G. & C. A. Parris, 11, Birdhurst-gardens, 5 houses and 5 garages, Croham-close; Waddon Concrete Co., Stafford-rd., workshop extension, Stafford-rd.; Smith, Wilkinson & Sons, Old Palace-rd., 10 houses, Berne-rd.; F. J. Archer, 33, Boundary-rd., Sidcup, showrooms, garages and office with rooms over, Whitehorse-lane.

Croydon.—C.B. to invite tenders for house for manager and a laboratory, at £950 and £350 respectively.

Darlington.—Corporation approved following buildings: H. Wilson, new premises, Northgate; H. B. Richardson, 12 houses, Prescott-st.; J. E. Chilton, 4 houses, Archdeacon-crescent; 4 bungalows, Stoopendale-avenue; 2 bungalows, Geneva-drive; H. Parvin, 12 houses, Claremont-rd.

Darlington.—T.C. propose extend public baths, at £32,000. Extension, estimated to cost £16,568, is to be carried out at Dodmire Council school. Public abattoir, at £11,500, and scheme for alterations at Grammar School, at £9,190.

Darwen.—T.C. approved branch premises, F. W. Woolworth & Co., Ltd., in Market-st. Plans by W. Priddle, architect, Victory House, Kingsway, W.C.2.

Derbyshire.—Proposed new by-pass road from Little Eaton to Coxbench, near Derby, been subject of public inquiry by M.T. New road is estimated to cost £55,510.

Dewsbury.—E. Fox & Sons, Ltd., Calder Mills, are to make additions to mill premises.

Doncaster.—William Nuttall's Charity Trustees proposing 24 cottages for aged spinsters at Bennetthorpe. Plans by H. Slater, architect, of H. Arnold & Son, Ltd., contractors, Printing Office-st.

Driffield.—It is proposed to build a new hospital to replace existing one on Bridlington-rd. Committee advertising for site.

Droitwich.—Council recommend central gas showroom.

Dudley.—Funds amounting to £12,000 to be raised for improvements to Voluntary Schools to meet requirements of B. of E.

Earls Barton.—Plans prepared by Mr. Frank H. Allen, of Northampton, for the erection of 22 houses at Earls Barton, are before the Parish Council.

Eastbourne.—T.C. approved: Charles Jewell Working Women's Club (architect, B. Stevens), alterations, 38-40, Seaside; G. & P. Attfield (architect, B. Stevens), two pairs of houses, Percival-rd., Hampden-pk.; Lunsford Co. (architect, A. Ford),

*See also our List of Contracts, Competitions, etc.

offices, St. Leonards Wharf, Whitley-rd.; R. E. Watkins (architects, P. D. Stonham & Son), shop with living rooms over, Albert-parade, Green-st.; S. D. Foulkes (architect, W. R. Hamblyn; builder, S. D. Foulkes), two pairs of semi-detached houses, Crunden-rd.; Croquet Club, The Saffrons (architects, P. D. Stonham & Son; builders, Miller & Selmes, Ltd.), alterations and additions, Croquet Pavilion, The Saffrons.

Easthampstead.—R.D.C. to purchase land in Binfield-rd. for houses.

Edmonton.—U.D.C. approved: J. Neilson, store building, Mabro Works, Cuckoo Hall-lane; G. W. Newman, 16 houses, Ashley-gardens; W. A. Cherry & Co., 18 houses, Tramway-av.; H. Seymour Couchman & Sons, engineering factory, Town-rd.; H. Seymour Couchman & Sons, lay-out of roads at northern end of Galliard-rd

Edmonton.—U.D.C. approved: F. Short, 3 garages, Silver-st.; Burnett & Eprill, lavatory block, Jewish Cemetery, Montagu-rd.; F. Short, 3 lock-up garages, Barrowfield-lane.

Essex.—E.C. decided that site of not less than five acres be obtained in convenient position between Great Beddow and Danbury, for new Central school to serve the needs of schools to east of Chelmsford.—Amended plans for senior school at Clacton approved, to provide accommodation for 480 scholars. Cost of £21,698.—In view of probable enlargement of Maldon Council school and its proposed use as a Central school, it was agreed that approximately two acres of additional adjoining land be purchased.—It was agreed to purchase two sites of not less than five acres each at Hornchurch for elementary schools.

Exeter.—U.D.C. approved: Factory buildings, The Works, British Fibro-cement Works, Ltd., per S. Butterworth & Duncan, architects.

Falmouth.—C. Russel Corfield, A.R.I.B.A., architect, 23, Church-st., prepared plans for villa, Spernan Gwyn-rd.

Formby.—U.D.C. approved: 3 pairs houses, Stanley-rd., for F. & W. Pickles.

Godmanchester.—T.C. propose 32 houses. G. Stevens, B.S.

Guildford.—T.C. approved: R.M.O.S. quarters (existing laundry), Royal Surrey County Hospital, for Hospital Authorities; alterations, "Bull Head" public-house, 38, High-st., for T. Amey.

Hampshire.—E.C. to provide new senior public elementary school at West End to accommodate about 360 children.—Committee also recommend enlargement Basingstoke Brook-st. Council school by providing additional accommodation for about 180 children, to provide a new senior girls' public elementary school to accommodate about 450 children, and also to provide a new junior mixed public elementary school to accommodate about 330 children.—Sub-committee also recommended enlargement Chilworth and Baddesley school by providing additional accommodation for about 120 children, and also to provide new senior public elementary school to accommodate about 200 children.

Harrogate.—E.C. considered plans of proposed new elementary school to be erected on Corporation Field, Wetherby-lane, and providing accommodation for 384 pupils. Resolved that the proposals be approved. Borough Engineer is C. E. Rivers.

Hemel Hempstead.—U.D.C. passed plans for steel-frame building at Water-lane, for Kepston, Ltd.

Heston and Isleworth.—U.D.C. approved: H. S. Bostock, 68 houses, Heston Park Park Estate: G. Whittaker, 6 shops with living accommodation over, Kingsley-rd., Hounslow; Geo. Wimpey & Co., 140 houses, Ellerdine-rd.; A. T. & W. E. Dunton, 5 houses, Ailsa-rd.; G. E. Galpine & Son, 6 houses, Heston-rd.; P. Chase Gardener & Co., 158 houses, Staines-rd. estate; London Co-operative Society, additions shops, London-rd.; J. P. Blake, 4 houses, Vicarage Farm-rd.; Berkeley & Berkeley, 6 shops, Bath-rd.

Hinckley.—J. S. Featherstone, S. to U.D.C., prepared plans for development of Middlesfield-lane housing site, at £41,974.

Hucknall.—U.D.C. received M.H. sanction to 82 houses.

Hyde.—E.C. submitted to B. of E. school reorganisation scheme.

Ince.—U.D.C. proposing 40 houses on chemical site, 100 houses on Westwood and 16 houses on Bushell's Farm. Plans by P. Fairclough, S.

Ingleton.—Extension of new school, increasing accommodation by 80 places, at £2,400, approved. Plans by H. Wormald, A.R.I.B.A., County Hall, Wakefield.

Ipswich.—E.C. passed revised educational programme for period 1930-33, which will involve capital cost of £259,269.

Kettering.—U.D.C. is recommended to erect 200 houses on Piper's Hill estate by direct labour. U.D.C. passed: 5 houses and shop for F. G. Barlow, in Bath-rd.

Kidderminster.—Management Committee propose extensions at General Hospital.

Knoll Hill.—A. Long, F.R.I.B.A., 21, New-st., West Bromwich, prepared plans for house at Knoll Hill, near Blakedown, to cost £10,000, for E. Stevens.

Knutsford.—Cheshire C.C. asked medical officer to prepare scheme for isolation hospital accommodation for Bucklow district.

Knutsford.—Bucklow R.D.C. proposing 14 houses at Carrington. R. C. Cordon, S., Station-bldgs., Altrincham.

London (City).—Corporation recommend £1,383 for improvements at staircases leading from Holborn Viaduct to Farringdon-street.—Repairs also sanctioned for £809 at wall on eastern side of Queenhithe dock.—£410 to be spent on repairs to offices of Superintendent of Cleansing and men's lavatories at depot, Upper Thames-street.

London (Finsbury).—B.C. received L.C.C. sanction to borrowing £64,500 for acquisition of Margaret-st. site for housing purposes

London (Mitcham).—U.D.C. approved: H. Poulson, 25 lock-up motor garages, rear of Baron-grove; A. Mattles Williams, garage and greenhouse, 31, Castleton-rd.; Surrey E.C., caretaker's cottage, Western-rd.; Meux's Brewery Co., Ltd., additions and alterations, The Victory p.h., 198, High-st., S.W.19; Long Thornton and District Improvement Association, extension club room, Middle-way; H. W. Bannan, 32 houses, Rowan-rd.; Hadnutt & Robinson, 38 houses, London-rd.; H. J. Parker, shop and printing works.

London (Stepney).—B.C. recommend £145 for staircase at ladies' marble baths, Whitechapel public baths.

Luton.—T.C. approved: C. Jeyes, 7 houses, Alexandra-av. and Blenheim-cres.; F. G. Day, extension of hat factory, Dudley-st.

Lutterworth.—R.D.C. proposing 8 more houses.—Leicestershire C.C. to extend new Central school for further 240 scholars.

Maidenhead.—Extensions to be made to hospital, for Committee, Mr. Stanley Hall, architect.

Manchester.—Licensing Justices approved plans alterations "City Hotel," Cooper-st., for Waldorf Cafes, Ltd.—Board of Management of Ancoats Hospital propose extension of ward blocks at institution in addition to new operating theatre block, boiler-house and laundry. Architects, Thomas Worthington & Sons, FF.R.I.B.A., 178, Oxford-rd.

Manchester.—Broughton, Atkinson & Eagle, architects, 37, Brown-st., Manchester, preparing plans for bakehouse at Ashley-lane, Moston, for Miss J. E. Hanks.—Extension to St. Bede's College been decided upon. Site, bounded by Mayfield, Wellington and Albert-rds., been secured. H. Greenhalgh, architect, 15, Mawdesley-st., Bolton, prepared plans. Cost £20,000.

Manchester.—Manchester Water Works Committee received tenders for first portion of Haweswater scheme, which will cost £750,000 to £1,000,000.

Melton Mowbray.—W. H. Jarvis, B.S., prepared plans for additional slaughter-house at Cattle Market.

Methley.—Scheme of alterations and additions is to be carried out at United Kingdom Hotel, for Wm. Whittaker & Co., Ltd.

Middlesbrough.—Housing Committee have under consideration formation of public utility society to be called the Church Army Housing, Ltd., to supply housing accommodation for large families.

Morecambe.—Corporation to develop site of old harbour by provision of bathing pool, at £30,000.—M.T. approved Corporation scheme for construction of coastal road.

Nelson.—B. of E. has in hand preparation of plans for senior school at Edge End.

Newcastle (Staffs).—Hollins & Jones, A.R.I.B.A., Lloyds Bank-chams., Newcastle-under-Lyme, are architects for emporium for Silverdale Co-operative Society, Ltd.

Norwich.—M.H. held inquiry into Corporation's application to borrow £48,023 to make park and artificial lake in Wensum Valley.

Nottingham.—Work will very soon be commenced on extension to Nottingham Central Library, which is to be erected on site at South Sherwood-st. New building, which is estimated to cost £21,432, will adjoin existing one.

Oldington.—Pritchard & Godwin, architects, Bank-bldgs., Kidderminster, prepared plans for offices at Oldington, for West Midland Sugar Co., Ltd.

Olton.—Announcement been made at annual meeting of Midland League of the Church of England Waifs and Strays Society in Birmingham that new home for "toddlers" estimated to cost £6,000, to be built on land in Kinston Green-rd., Olton.

Ormskirk.—M. James, of Bescar Brow-lane, Scarisbrick, near Ormskirk, developing housing site in Mill Dam-lane, Burscough, near Ormskirk.

Oxford.—T.C. approved new classrooms at Headington Council school.—City Engineer submitted lay-out plan for housing estate at Cuttesiowe for 142 houses.

Paignton.—U.D.C. approved: 4 detached houses, Winsu-av., Gower Construction Co., Ltd.

Pocklington.—R.D.C. received sanction from M.H. to houses at Wilberfoss, Market-Weighton, Goodmanham and Thornton.

Preston.—T.C. approved: W. Gabbott, for Sons of Temperance pavilion, Emerson-rd.; W. Smirk, for W. Smirk & Sons, 6 houses, Argyle-rd.; P. A. Baines, for J. Pyke & Sons, extensions to corn mill, Arthur-st.

Ramsgate.—Holy Trinity Church hall to be reconstructed at £4,000. H. H. Stroud, architect, 37, High-st.

Rotherham.—Mapins Brewery, Ltd., propose rebuild "Bridge Inn." Plans by J. B. Knight, architect, Regent House, 48, Moorgate-st.

Rugby.—Franklin & Newman, architects and surveyors, Regent-st., architects for pavilion and lavatory block at Hillmorton recreation ground, for P.C.; 8 houses, Kingsley-av., Hillmorton, for Millfields Estate (Rugby), Ltd.; 24 houses, Vernon-av., Hillmorton, for R. Gardner & Son.

Sale.—Cheshire E.C. obtained sanction for £8,700 for extensions at High School for Girls.

Scrooby.—Parish Church to be restored and renovated.

Settle.—J. W. Broughton, 19, High-st., Skipton, architect for additions at Langcliffe Church.

Stockport.—A. J. Archer, 13, Temple-st., Birmingham, is architect for factory on Stockport-rd., Cheadle Hulme, for Smith Potato Crisp (1929), Ltd., 58, Brinksway.

Surbiton.—U.D.C. approved: Additions, Ivydene, Southborough-rd., Joseph Hill; 32 houses, 13-39 and 14-48, Lyndhurst-av., A. Searle; 7 pairs semi-detached and 1 detached house, Tolworth-rise, J. J. Hodgson & Sons; semi-detached houses, 125-127, Surbiton Hill-pk., H. C. Jones & Co.; 4 houses, 1, 3, 5, 7, The Byeways, H. C. Jones & Co.; reconstruction of United Services Club, Hollyfield-rd., Joseph Hill; 8 houses, Minniedale, R. C. Nightingale; house and school, 27, Tolworth-rise, J. J. Hodgson & Sons.

Tadcaster.—F. G. Bowman & Son, 18, Par-row, Leeds, architects for additional casual wards at institution, providing for 22 beds, for Public Assistance Committee.

Thornbury.—English Electric Co., Ltd., to reconstruct Phœnix Works, including erecting shop.

Thorne.—R.D.C. propose 400 houses at Stainforth, Hatfield and Thorne.

Uppingham.—R.D.C. requested housing architect, G. Dolphin, North-st., to prepare plans for houses at Gretton.

Walthamstow.—T.C. approved: 7 shops, High-st., C. L. Fox; 5 houses, Beaconstree-av., A. Good; 3 garages, rear 7 and 9, Church Hill, Liverpool and Victoria Friendly Society; 112 houses, Highams Estate, Law Land Building Department.

Weybridge.—U.D.C. approved: Weybridge Hospital, board room over children's ward.

Weymouth.—Andrews & Andrews, architects, 127, Dorchester-rd., prepared plans for alterations and improvements Dorothy Restaurant.

Wharfedale.—R.D.C. passed: 3 pairs semi-detached houses, off Hawksworth-lane, Hawksworth, for T. Greenfield; alterations and additions, White Hart Hotel, Pool, for Tower Brewery.

Whitefield.—Lancs E.C. to erect junior school at the Besses o' th' Barn.

Woking.—S. been instructed to prepare plans for 30 pairs of houses at Westfield.

Wolverley.—Sir Aston Webb & Son, architects, 19, Queen Anne's-gate, London, S.W.1, prepared plans for schools at Wolverley, for Sebright's Trustees.

Worsborough.—U.D.C. purchasing ground at Ward Green for houses.

Wycombe.—T.C. approved: Machine shops, Desborough-av., for Garland & Son; 18 houses, Mile End-rd., for E. C. Cooper; 12 houses, Chairborough-rd., for White Bros.

Yeovil.—T.C. received M.H. sanction for £3,800 in respect of 27 houses on land adjoining Highfield-rd. housing site.

York.—The Yorkshire Philosophical Society decided to carry forward upper floor at south end of Hospitium over centre lower building.

York.—Inquiry into an application by Corporation to borrow £3,400 for Turkish baths at St. George's Baths, been held by M.H.

PRICES CURRENT OF MATERIALS.*

Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry.

BRICKS, &c.

Per 1,000 Alongside, in River Thames up to London Bridge.

	£ s. d.
Best Stocks	4 2 6
Second Hard Stocks	3 18 6

Per 1,000. Delivered at London Goods Stations.

	£ s. d.		£ s. d.
Flettons, at King's Cross	2 12 3	Best Blue Pressed Staffs	9 5 0
Do., grooved for Plaster ...	2 14 3	Do. Bullnose ...	9 15 0
Do., Bullnose...	3 7 3	Blue Wire Cuts	7 5 0

Best Stourbridge Fire Brick :—

2½ in.	8 11 0	3 in.	10 3 0

GLAZED BRICKS—

Best White Ivory and Salt Glazed Stretchers ...	21 0 0	D'ble Str'tch'rs	29 10 0
		D'ble Headers...	26 10 0
Headers	20 10 0	One Side and two Ends ...	30 10 0
Quoins, Bullnose and 4½ in. Flats	27 10 0	Two Sides and one End	31 10 0
		Splays, and Squints	2s 0 0

Second Quality, £1 per 1,000 less than best. Cream and buff, £2 extra over white. Other colours. Hard Glaze, £5 10s. extra over white.

BREEZE CONCRETE SLABS

Delivered London

	s. d.		s. d.
2 in. per yd. super.	1 11	3 in per yd super	2 9
2½ in. " "	2 4	4 in. " "	3 6

	s. d.	
Thames Ballast	9 9 per yd	delivered 2 miles radius Paddington.
Pit Sand	12 0 " "	
Thames Sand	12 0 " "	
Best Washed Sand.....	12 6 " "	
½ in. Shingle for Ferro-Concrete	11 6 " "	
¼ in.	12 0 " "	
½ in. Broken Brick.....	11 6 " "	
Pan Breeze	8 0 " "	

Per ton delivered in London area in full van loads.

Best Portland Cement. British.

Standard Specification. Test £2 6 0 to £2 8 0

Bths. alongside at Vauxhall in 80-ton lots.

	£ s. d.
Ferrocrete per ton extra on above	0 7 6
Vitrocrete " "	0 7 6
Super Cement (Waterproof)	3 18 0
Roman Cement	8 15 0
Parian Cement.....	5 15 0
Keene's Cement, White	5 15 0
" Pink.....	5 10 0
Plaster, Coarse, Pink	3 0 0
" White	3 12 6
" Fine	5 12 6
Strapite, Coarse	3 9 0
" Finish	3 17 0
Grey Stone Lime.....	2 10 9
Chalk Lime	2 10 9
Best Ground Blue Lias Lime	1 17 6
Hair ..... per cwt.	2 2 6
Granite Chippings	1 12 0

NOTE.—Sacks are charged 1s. 9d. each and credited 1s. 6d. if returned in good condition within three months carr. pd.

Stourbridge Fireclay in s'cks 27s. 0d. per ton at rly. dp.

STONE.

BATH STONE.—Delivered in railway trucks at Westbourne Park, Paddington, G.W.R., or South Lambeth, G.W.R., per ft. cube..... s. d. 2 10

BEER STONE—RANDOM BLOCK—

Free on rail at Seaton Station per ft. cube	2 3
Delivered free on rail Nine Elms, S.R. per ft. cube	3 1½

Selected approximate size one way, 1d. per cubic foot extra; selected approximately three sizes or for special work, 3d. per cubic foot extra.

PORTLAND STONE.—

Brown Whitbed, in random blocks of 20 ft. average, delivered in railway trucks at Nine Elms, S. Rly., South Lambeth Station, G.W.R., and Westbourne Park, Paddington, G.W.R., per ft. cube.....	4 4½
Do. do. delivered on road wagons at above stations, per ft. cube.....	4 5½
White bastard, 3d. per ft. cube extra.	

NOTE.—1d. per ft. cube extra for every foot over 20 ft. average, and ½d. per ft. beyond 20 ft.

HOPTON-WOOD STONE.—

	s. d.
W.O.B. Quarries, Wirksworth, Derbyshire. Random blocks from 10 ft. and over P. ft. cb.	1 4
Sawn two sides ..... "	22 6
Sawn three or four sides ..... "	27 6

YORK STONE, BLUE—*Robin Hood Quality.*

Delivered at any Goods Station, London.

4 in. sawn two sides landings to sizes (under 20 ft. super)..... Per ft. super	5 6
6 in. rubbed two sides, ditto ..... "	6 0
3 in. sawn two sides slabs (random sizes) "	2 3½
2 in. to 2½ in. sawn one side slabs (random sizes) ..... "	1 6½
1½ in. to 2 in. ditto, ditto ..... "	1 3½

HARD YORK—

Delivered at any Goods Station, London, Scappled random blocks ..... Per ft. cube	6 3
4 in. sawn two sides landing to sizes (under 40 ft. super) ..... Per ft. super	5 1½
6 in. rubbed two sides, ditto ..... "	6 1½
4 in. sawn two sides slabs (random sizes) "	2 1½
3 in. ditto ditto "	2 10
2 in. self-faced random flags.....Per yd. super	8

CAST STONE.

Delivered in London area in full van loads, per ft. cube: Plain, 8s. 6d.; Moulded, 9s. 6d.; Cills, 10s. 6d.

WOOD.

GOOD BUILDING DEAL.

Inches.	per stan.	Inches.	per stan.
4 × 11	£27 10	3 × 6	£21 0
4 × 9	26 0	3 × 11	25 0
4 × 8	25 0	2 × 11	26 0
4 × 7	23 0	3 × 9	24 0
3 × 8	22 0	2½ × 9	24 0
3 × 7	22 0	3 × 4½	21 0
2½ × 7	21 0	3 × 4	21 6

PLANED BOARDS.

1 × 11	£30 0	1 × 9	£28 0

PLAIN EDGE FLOORING

Inches.	per sq.	Inches.	per sq.
⅝.....	18/-	1¼.....	30/-
¾.....	21/-	1½.....	34/-
1	24/-		

TONGUED AND GROOVED FLOORING

Inches.	per sq.	Inches.	per sq.
1	24/-	⅝.....	16/6
1¼.....	30/-	¾.....	19/-
1½.....	34/-	1	24/-

ins. BATTENS	s. d.	SAWN LATHS.	s. d.
1 × 2.....per 100 ft.	2 6	Per bundle	2 6

1" AND UP THICK.

	£ s. d.	£ s. d.
Dry Austrian Wainscot, per ft. cube	0 16 0	to 0 18 0
Dry American and/or Japanese Figured Oak, ft. cube.....	0 14 0	to 0 15 0
Dry American and/or Japanese Plain Oak, ft. cube	0 10 0	to 0 13 0
Dry sq. edged Honduras Mahogany, ft. cube.....	0 15 0	to 0 18 0
Dry Log cut Honduras Mahogany, ft. cube.....	0 16 0	to 1 1 0
Dry Cuba Mahogany, ft. cube...	1 1 0	to 1 10 0
Dry Teak, ft. cube	0 13 0	to 0 15 0
Dry American Whitewood, ft. cube	0 10 0	to 0 14 0
Best Scotch Glue, per cwt.	4 10 0	to —
Liquid Glue, per cwt.	4 7 0	to 5 10 0

SLATES

First quality slates from Bangor or Portmadoc carriage paid in full truck loads to London Rate Station. Per 1,000 actual.

	£ s. d.		£ s. d.
24 by 12	31 0 0	18 by 10	17 5 0
22 by 12	27 19 6	18 by 9	15 10 0
22 by 11	25 5 0	16 by 10	14 14 6
20 by 12	24 7 6	16 by 8	11 5 0
20 by 10	20 17 6		

TILES.

Delivered at London rate stations in full truckloads of not less than 6 tons.

	Per 1,000. f.o.r. London.
Best machine-made tiles from Broseley or Staffordshire district.....	£5 2 6
ditto hand-made ditto	5 7 6
Ornamental ditto	5 12 6
Hip and valley tiles (per dozen) { Hand-made	0 9 6
{ Machine-made	0 9 0

METALS.

JOISTS, GIRDERS, &c., TO LONDON STATION, PER TON—	
R.S. Joists, cut and fitted	£12 10 0
Plain Compound Girders	14 10 0
" Stanchions	16 10 0
" In Roof Work	19 10 0

MILD STEEL ROUNDS.—To London Station, per ton

Diameter.	£ s. d.	Diameter.	£ s. d.
½ in.	12 0 0	⅝ in. to ¾ in.	10 15 0
⅜ in.	11 0 0	⅞ in. to 2½ in.	10 10 0

WROUGHT-IRON TUBES AND FITTINGS—

(Discount off List for lot of not less than £7 net value delivered direct from Works, 2½ per cent. less above gross discounts, carriage forward, if sent from London Stocks.)

	Tubes. Wrought Mild Steel.	Tubes. Genuine Staffs. Iron.	Fittings. ⅜ in. and under.	Fittings. Over ⅜ in.	Flanges. ⅜ in. and under.	Flanges. Over ⅜ in.
	%	%	%	%	%	%
Gas	65	52½	45	47½	55	57½
Water	61½	48½	40	42½	50	52½
Steam	57½	45	35	37½	45	47½
Galv. gas.....	52½	40	35	37½	45	47½
Galv. water	47½	35	30	32½	40	42½
Galv. steam	42½	30	25	27½	35	37½

*C.I.—HALF-ROUND GUTTERS—London Prices ex Works

Per yd. in 6 ft lengths.	Gutters.	Angles and Nozzles.	Stop Ends.
3 in.	10d.	7½d.	2½d.
3½ in.	10½d.	8½d.	2½d.
4 in.	10½d.	9½d.	2½d.
4½ in.	11½d.	10½d.	2½d.
5 in.	1/1½	11½d.	3½d.

*O.G. GUTTERS.

3 in.	1/0	10½d.	2½d.
3½ in.	1/0½	10½d.	2½d.
4 in.	1/1½	10½d.	2½d.
4½ in.	1/2½	1/0½	2½d.
5 in.	1/5	1/2½	3½d.

*RAIN-WATER PIPES, &c.

Per yd. in 6 ft. Pipe.	Bends, stock angles.	Branches, stock angles.
2 in. plain.....	1/2½	9½d.	1/2
2½ in. "	1/5	10½d.	1/4½
3 in. "	1/6½	1/1½	1/8½
3½ in.	1/11	1/4½	1/11½
4 in. "	2/2½	1/7½	2/4½

*The above R.W. Goods prices are subject to an advance of 5% from October 29th, 1929.

L.C.C. COATED SOIL PIPES—London Prices ex Works.

	Bends, stock angles. s. d.	Branches, stock angles. s. d.
In. per yd. in 6 fts. plain	2 5	1 9	2 1
2½ in. "	2 9½	1 10½	2 7
3 in. "	3 0	2 1	3 1
3½ in. "	3 3	2 7	3 7
4 in. "	3 6	2 11	4 1½

L.C.C. COATED DRAIN PIPES—London Prices ex Works

	Bends, stock Branches, Pipe, angles, stock angles. s. d.	s. d.
3 in. per yd. in 9ft. lengths	3 6	4 6	7 6
4 in. " "	4 8	5 5	9 3
5 in. " "	6 3	9 6	15 0
6 in. " "	7 3	11 6	19 0

Gaskin for jointing, 41/- per cwt.

	Per ton in London. £ s. d.		£ s. d.
IRON— Common bars.....	11 0 0	to	12 0 0
Staffordshire Crown Bars— Good merchant quality	11 10 0	to	12 10 0
Staffordshire Marked Bars.....	14 0 0	...	15 0 0
Mild Steel Bars	10 0 0	...	11 0 0
Steel Bars, Ferro-Concrete quality, basis price	9 10 0	...	10 10 0
Hoop iron, basis price	11 10 0	...	12 10 0
" Galvanized	27 0 0	...	28 0 0
Soft Steel Sheets, Black— Ordinary sizes, to 20 g....	11 10 0	...	12 0 0
" " " 24 g....	13 0 0	...	14 0 0
" " " 26 g....	15 0 0	...	16 0 0
Sheets Flat Best Soft Steel, C.R. and C.A quality— Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15 0 0	...	16 0 0
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 22 g. and 24 g.....	16 0 0	...	17 0 0
Ordinary sizes, 6 ft. by to 3 ft. to 26 g....	18 0 0	...	20 0 0

No. 1 quality £4 per ton extra

Flat and Galvanised Corrugated Sheets—

Ordinary sizes, 6 ft. to 9 ft. to 20 g.	15 10 0	...	16 10 0
Ordinary sizes, 6 ft. to 9 ft. to 22 g. and 24 g.	16 0 0	...	17 0 0
Ordinary sizes, 6 ft. to 9 ft. to 26 g.	19 0 0	...	20 0 0

Sheets Galvanised Flat, Best quality—

Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	21 0 0	...	22 0 0
Best Soft Steel Sheets, 22 g. and 24 g.	23 0 0	...	25 0 0
Best Soft Steel Sheets, 26 g.	24 10 0	...	25 10 0
Cut Nail ,, ½ in. to 6 in.....	16 0 0	...	17 0 0

* Under 3 in. usual trade extras.)

METAL WORK.—Standard sizes, suitable for complete house, including all fittings, painting two coats, and delivery to job, average price about 1s. 4d. to 1s. 7d. per foot super.

LEAD, &c.

(Delivered in London.)	£ s. d.
LEAD—Sheet, English, 4 lb. and up	27 0 0
Pipe in coils	27 10 0
Soil pipe	30 10 0
Compo pipe	31 10 0

NOTE.—Country delivery, 20s. per ton extra; lots under 3 cwt. 3s. per cwt. extra, and over 3 cwt. and under 5 cwt., 1s. 6d. per cwt extra. Cut to sizes, 6s. cwt. extra.

Old lead, ex London area, at Mills ..... per ton	£16 10 0

COPPER.

	s. d.
Seamless Copper tubes (basis)..... per lb.	1 3
Strong sheet ..... "	1 0
Thin..... "	1 1
Copper nails ..... "	1 11
Copper wire ..... "	2 0

PLUMBERS' BRASS WORK.

Delivered in London.

NEW RIVER PATTERN SCREW DOWN BIB COCKS FOR IRON.

½ in. ¾ in. 1 in. 1¼ in. 1½ in. 2 in.
29/- 45/- 76/- 153/- 246/- 510/- per doz.

NEW RIVER PATTERN SCREW DOWN STOP COCKS AND UNIONS.

½ in. ¾ in. 1 in. 1¼ in. 1½ in. 2 in.
41/6 62/- 92/- 174/- 300/- 588/- per doz.

RIVER PATTERN SCREW DOWN MAIN FERRULES.

½ in. ¾ in. 1 in.
39/6 60/- 116/6 per doz

CAPS AND SCREWS.

1¼ in. 1½ in. 2 in. 3 in. 3½ in. 4 in.
7/6 10/- 14/- 23/- 30/- 42/- per doz.

DOUBLE NUT BOILER SCREWS.

½ in. ¾ in. 1 in. 1¼ in. 1½ in. 2 in.
9/6 11/- 17/- 29/- 36/- 63/- per doz.

BRASS SLEEVES.

1¼ in. 2 in. 3 in. 3½ in. 4 in.
10/- 12/- 20/- 24/- 31/- per doz.

NEW RIVER PATTERN CROYDON BALL VALVES, S.F.

¾ in. 1 in. 1¼ in. 1½ in.
35/- 56/- 98/- 162/- 228/- per doz.

DRAWN LEAD P. & S. TRAPS WITH BRASS CLEANING SCREW.

1¼ in. 1½ in. 2 in. 3 in.
8 lbs. P. traps ... 23/- 41/- 56/- 101/- per doz.
8 lbs. S. traps ... 35/- 45/- 66/- 126/- "

TIN.—English Ingots, 2/3 per lb. SOLDER.—Plumber's 1/-, Tinmen's 1/2. Blowpipe 1/3 per lb.

PAINTS, &c.

Raw Linseed Oil, in pipes ..... per gallon		0 3 7
" " " in barrels ... "		0 3 9
" " " in drums ... "		0 3 11
Boiled " " in barrels ... "		0 4 1
" " " in drums ... "		0 4 3
Turpentine in barrels ..... "		0 4 0
" in drums (10 galls) "		0 4 2
Genuine Ground English White Lead, per ton		52 0 0

(In not less than 5-cwt. casks.)

Extra for 1-cwt. kegs over 5-cwt. casks is 5/9 cwt.

* The information given on this page has been specially compiled for THE BUILDER, and is copyright. The aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

PRICES CURRENT OF MATERIALS (*contd.*)

PAINTS, &c. (*contd.*)

GENUINE WHITE LEAD PAINT.

		£	s.	d.
"Father Thames," "Nine Elms," "Park," "Supremus," "St. Paul's," "Morganwyte," "Polseco," "J." Brand, and other best brands (in 14-lb. tins) not less than 5 cwt. lots	per ton delivered	71	10	0
Red Lead, Dry (packages extra)	per ton	39	0	0
Best Linseed Oil Putty	per cwt.	0	15	6
Fillcol		0	16	6
Size. XD quality	Tkn.	0	3	0

GLASS.

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

	Per ft.		Per ft.
15 oz. fourths ...	2½d.	32 oz. fourths	6½d.
15 „ thirds ...	3½d.	32 „ thirds	9d.
21 „ fourths ...	3½d.	Obscured Sheet, 15 oz.	3½d.
21 „ thirds ...	4½d.	„ 21 oz.	4½d.
26 „ fourths ...	4½d.	Fluted, 15 oz. 7d., 21 oz.	9½d.
26 „ thirds	6½d.	Em'bed, 15 oz. 4½d., 21 oz.	6d.

Extra price according to size and substance for squares cut from stock.

ENGLISH ROLLED plate in CRATES OF STOCK SIZES.

	Per ft.
¼ Rolled plate	4½d.
⅛ Rough rolled	5½d.
Rough rolled	5½d.
Figured Rolled, Baltic, Oceanic, Arctic, Stippolyte, and small and large Flemish White	5½d.
Ditto, tinted	8½d.
Rolled Sheet	4½d.
White Rolled Cathedral	5d.
Tinned do.	7d.

Cast plate is same price as rough rolled.

"VITA" GLASS.

	Per foot. s.	d.
Clear sheet—not exceeding 1 foot	1	0
Do. do. 2 feet	1	3
Do. over 2 feet	1	9
Polished plate—not exceeding 1 foot	1	6
Do. not exceeding 2 feet	3	0
Cathedral—not exceeding 1 foot	1	0
Do. larger sizes	1	6
Horticultural—for greenhouses, etc. Sizes up to 24 inches by 18 inches or not exceeding 3 feet	1	0
3/16 in. Wired Georgian Design. Sizes up to 108 inches long by up to 24 inches wide	2	6

VARNISHES, &c.

		Per Gallon £	s.	d.
Oak Varnish	Outside	0	14	0
Fine ditto	ditto	0	16	0
Fine Copal	ditto	0	18	0
Pale Copal	ditto	1	0	0
Pale Opal Carriage	ditto	1	4	0
Best ditto	ditto	1	12	0
Floor Varnish	Inside	0	18	0
Fine Pale Paper	ditto	0	18	0
Fine Copal Cabinet	ditto	1	2	6
Fine Copal Flatting	ditto	1	0	6
Hard Drying Oak	ditto	0	18	0
Fine Hard Drying Oak	ditto	0	19	0
Fine Copal Varnish	ditto	1	0	0
Pale ditto	ditto	1	12	0
Best ditto	ditto	1	2	6
Best Japan Gold Size		0	12	6
Best Black Japan		0	10	6
Oak and Mahogany Stain (water)		0	12	0
Brunswick Black		0	7	0
Berlin Black		0	14	0
Knotting (patent)		1	5	0
French and Brush Polish		0	17	0
Liquid Dryers in Terebene		0	9	0
Cuirass Black Enamel		0	7	0

HOUSING PROGRESS IN SCOTLAND

THE following figures show the progress that has been made in State-aided housing schemes in Scotland to March 31, 1930 :—

	Completed.	Under construction.
1919 Act	25,129	—
Do. (by public utility societies)	421	—
Private subsidy schemes (1919 Additional Powers Act)	2,324	—
Slum clearance schemes ...	11,341	2,133
1923 Act :—		
By local authorities ...	4,030	—
By private enterprise ...	17,803	1,426
By public utility societies	80	—
1924 Act :—		
By local authorities ...	42,826	5,468
By private enterprise ...	1,431	1,512
By public utility societies	127	—
Demonstration houses ...	17	—
Steel houses erected on behalf of Government by Scottish National Housing Company	2,552	—
	108,081	10,539

NEW BUILDINGS IN SCOTLAND

Ayr.—HOUSES.—Plans for the erection of eight houses on the Newton-on-Ayr glebe site for the Corporation, which have been passed, are estimated to cost £2,300.

East Lothian.—RESERVOIR.—With a view to relieving unemployment, the East Lothian Western District Water Board have agreed to accelerate the construction of Hopes reservoir in the Lammermoors, for which they obtained power in 1922. Plans and schedules are being prepared and tenders will be taken shortly. The work is expected to take about four years, and to employ 200 to 300 men.

East Wemyss.—HOUSES.—Tenders are being invited by the Kirkcaldy D.C. for the erection of 48 houses. The architect is Mr. Geo. B. Deas, of Central-chambers, Kirkcaldy.

Edinburgh.—ADDITIONS.—Additions are to be made to the Bellevue Technical and Commercial School for the E.C. Tenders are being invited, and the architect is Mr. J. A. Carfrae, 3, Queen-street.

Cambusnethan.—HOUSING.—At a special sitting of the Motherwell and Wishaw Dean of Guild Court plans were passed for the building of 44 houses in Cambusnethan district of the Wishaw area under the burgh's housing scheme. Ten blocks, consisting of 40 houses, are to be erected at Thrushbush-road, Cambusnethan, and one block, consisting of four houses, at Morton's Land, Cambusnethan.

Glasgow.—HOUSING.—Linings have been granted by the Glasgow Dean of Guild Court for the construction of a large number of dwelling-houses at Gairbraid-avenue and for the building of a school at Carntyne. An extension scheme at Gairbraid-avenue will comprise 68 houses of three apartments and 90 of two apartments, while 18 of three apartments and 18 of two apartments will be erected at Water-street and Dobbies-loan. The site of the school, with janitor's house, at Carntyne is at the junction of Liberton-street, Bedford-street, and Warriston-crescent, and will cost £35,000.—Other linings granted by the Court were :—Roman Catholic Archdiocese of Glasgow—alterations to church at Kelvinside-gardens; Lambhill Evangelistic Mission—addition to hall at 25, Knapdale-street, Lambhill; B.B. Pictures (1920), Ltd.—alterations to cinema at 201, Victoria-road; MacTaggart and Mickel, Ltd.—ten shops at Woodside, Aikenhead, Cathcart; Alexander Kennedy and Sons, Ltd., Castlebank Dyeworks—two buildings at Anniesland-road laundry; Corporation Halls Department—alterations to halls at Barrhead-road; Knightswood Motors, Ltd.—sales building and car lock-ups at Knightscliffe-avenue.

Rosyth.—CHURCH.—In Dunfermline Dean of Guild Court plans were passed for the erection of a new church at Rosyth to cost £5,000.

Paisley.—CHAPEL.—Operations will be commenced immediately with the building of the new chapel which is to occupy the site at the junction of Incle-street and Glasgow-road, Paisley. The building is estimated to cost about £25,000 to £27,000, and there will be seating accommodation for 1,300 persons.

BUILDING TRADE WAGES IN SCOTLAND*

The following are the present rate of wages in the building trade in the principal towns of Scotland. Every endeavour is made to ensure accuracy, but we cannot be responsible for errors that may occur.

	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Labourers—Masons'‡ Bricklayers'† Plasterers'†
Aberdeen	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Airdrie	1/7	1/7	1/7	1/8	1/7	1/7	1/8	‡1/2½ †1/2½
Alexandria	1/7½	1/7½	1/7½	1/8½	1/7½	1/7½	1/8	‡1/2½ †1/2½
Arbroath	1/6½	1/6½	1/7½	1/6½	1/6½	1/6½	1/5½	1/1
Ayrshire	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Bathgate	1/7½	1/7½	1/7½	1/7½	1/7½	1/7½	1/6½	1/2 to 1/3
Berwickshire	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Blairgowrie	1/7	1/7	1/7	1/7½	1/5	1/7	1/4	10d. to 1/-
Bo'ness	1/7	1/7	1/7	1/8	1/7	1/7	1/8	†1/2½
Broughty Ferry	1/8	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Clackmannanshire	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Coatbridge	1/7	1/7	1/7	1/8	1/7	1/7	1/8	‡1/2½ †1/2½
Dumbartonshire	1/7	1/7	1/7	1/8	1/7	1/7	1/8	1/2½
Dumfries	1/6½	1/6½	1/7½	1/6½	1/6½	1/6½	1/6½	1/2
Dumfriesshire	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Dundee	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Dunfermline	1/7	1/7	1/7	1/8	1/7	1/7	1/8	1/2½
Dunoon	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
East Lothian	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Edinburgh	1/7	1/7	1/7	1/8	1/7	1/7	1/8	1/2½
Falkirk	1/7	1/7	1/7	1/8	1/7	1/7	1/8	1/2½
Forfarshire	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Fort William	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/2
Galashiels	1/6½	1/7	1/6½	1/7	1/6½	1/6½	1/7	1/2
Glasgow	1/7½	1/8	1/7½	1/8½	1/7½	1/7½	1/8	1/2½
Greenock	1/7	1/7	1/7	1/8	1/7	1/7	1/8	1/2½
Hamilton	1/7½	1/8	1/7½	1/8½	1/7½	1/7½	1/8	‡1/2½ †1/3
Hawick	1/7	1/7	1/7	1/7–1/7½	1/7	1/7	1/7	1/2½
Helensburgh	1/7½	1/7½	1/7½	1/8½	1/7½	1/7½	1/8	1/2½
Inverness	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/- to 1/3
Inverurie	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Kilmarnock	1/7½	1/7½	1/7½	1/8½	1/7½	1/7½	1/8	1/2½
Kincardineshire	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Kinross-shire	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Kirkcaldy	1/7	1/7	1/7	1/8	1/7	1/7	1/8	1/2½
Kirkwall	1/5	1/5	1/4	1/5	1/5	1/4	1/4	1/-
Lanarkshire	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Leith	1/7	1/7	1/7	1/8	1/7	1/7	1/8	1/2½
Mid Lothian	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Motherwell	1/7½	1/8	1/7½	1/8½	1/7½	1/7½	1/8	‡1/2½ †1/2½
Peebleshire	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Perth	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Perthshire	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Peterhead	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/6½	1/2
Renfrewshire	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Rothesay	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Roxburghshire	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
St. Andrews	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Selkirkshire	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
Stirling	1/7½	1/7½	1/7½	1/8½	1/7½	1/7½	1/7½	1/2½
Stirlingshire (Eastern District)	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Stornoway	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/1½
West Lothian	1/7	1/7	1/7	1/7	1/7	1/7	1/7	1/2½
Wishaw	1/7½	1/8	1/7½	1/8½	1/7½	1/7½	1/8	‡1/2½ †1/2½

* The information given in this table is copyright. The rates of wages in the various towns in England and Wales are given on page 875.

CURRENT PRICES FOR BUILDING WORK IN LONDON*

EXCAVATOR.

		s.	d.
Digging and throwing or wheeling and filling carts, and carting away to shoot—6 ft. deep	per yard cube	11	0
Add if in clay	" "	1	0
Add for every additional depth of 6 ft.	" "	0	6
Planking and strutting to trenches	per foot super	0	5
Do. to sides of excavation, including shoring	" "	1	0

CONCRETOR.

		s.	d.
Portland cement concrete in foundation 1 to 6	per yard cube	38	0
Add if in underpinning in short lengths	" "	7	0
Add if in floors 6 in. thick	" "	3	3
Add if in beams	" "	3	9
Add if aggregate 1 : 2 : 4	" "	10	0
Add for hoisting not exceeding 10 ft. beyond the first 10 ft.	" "	2	6

BRICKLAYER.

		£	s.	d.
Reduced brickwork in lime mortar and Flettons bricks	per rod	32	0	0
Add if in stocks	"	7	10	0
Add if in Staffordshire blues	"	22	0	0
Add if in Portland cement and sand	"	1	10	0

FACINGS.

		s.	d.
Extra for facing in English or Flemish bond for every 10s. per 1,000 over the price of the common bricks	per ft. super	0	1½

POINTING.

		s.	d.
Neat flat struck or weathered joint	" "	0	3

ARCHES.

Extra only to the price of ordinary brickwork :—

		s.	d.
Fair external in half brick rings	" "	0	10
Axed in stocks	" "	0	9
Rubbed and gauged jointed in putty camber or segmental	" "	0	0

SUNDRIES.

		s.	d.
Damp course in double course of slates breaking joint and bedded in Portland cement	" "	0	1
Setting ordinary register grates and stoves	each	1	0
Setting kitchener, including forming flues, &c., with all necessary fire bricks	"	4	15

ASPHALTER.

		s.	d.
Half-inch horizontal damp course	per yard super	4	6
Three-quarter-inch vertical damp course	" "	9	6
Three-quarter-inch on flats in two thicknesses	" "	6	3
Angle fillet	per foot run	0	3
Skirting and fillet 6 in. high	" "	1	2

MASON.

		s.	d.
York stone templates fixed	per foot cube	13	0
York stone sills fixed	" "	22	0
Bath stone and all labour fixed	" "	10	6
Beer stone and all labour fixed	" "	15	0
Portland stone fixed	" "	20	0

SLATER.

		s.	d.
Welsh 16 in. × 8 in. 3 in. lap, including nails	per square	72	9
Do. 20 in. × 10 in. Do. Do.	"	80	9
Do. 24 in. × 12 in. Do. Do.	"	90	0

CARPENTER AND JOINER.

		s.	d.
Fir framed in plates	per foot cube	5	0
Do. joists	" "	5	6
Do. roofs, floors and partitions	" "	6	0
Do. trusses	" "	8	6

		¾"	1"	1¼"	2"
Deal rough close boarding	per sq.	35/6	40/-	45/-	72/-

		s.	d.
Flat centering for concrete floor, including struts or hangers	"	50	0
Do. to beams	per ft. sup.	0	11
Centre for arches	"	1	6
Gutter boards and bearers	"	1	0

FLOORING.

		¾"	1"	1¼"	1½"
Deal-edges shot	per sq.	—	44/6	53/-	60/6
Do. tongued and grooved	"	—	49/-	57/6	65/-
Do. matchings	"	45/-	51/-	—	—
Moulded skirting, including backings and grounds	per ft. sup.	1/6	1/9	2/-	2/6

SASHES AND FRAMES.

		s.	d.
One-and-a-half moulded sashes or casements	per foot super	1	10
Two Do. Do. Do.	" "	2	1
Add for fitting and fixing	" "	0	3
Deal-cased frames with 1 in. inner and outer linings, 1¼ in. pulley stiles tongued to linings, hard wood sills with 2 in. moulded sashes in squares, double hung, double hung with pulleys, lines and weights; average size	"	3	9

DOORS.

		1¼"	1¾"	2"
Two-panel square framed	per ft. sup.	2/1	2/4	2/6
Four-panel Do.	"	2/5	2/8	2/11
Two-panel moulded both sides	"	2/8	2/11	3/2
Four-panel Do. Do.	"	2/11	3/2	3/5

CARPENTER AND JOINER—continued.

FRAMES.

		s.	d.
Deal wrot moulded and rebated	per foot cube	14	0

		1"	1¼"	1½"
Plain deal jamb linings framed	per ft. sup.	1/7	1/8	1/11
Deal shelves and bearers	"	1/4	1/6	1/9
Add if cross-tongued	"	2d.	2d.	2d.

STAIRCASES.

		1"	1¼"	1½"	2"	2½"
Deal treads and risers in and including rough brackets		2/1	2/4	2/9	—	—
Deal strings wrot on both sides and framed		1/8	2/-	2/2	2/8	—

		s.	d.
Housings for steps and risers	each	0	11
Deal balusters, 1 in. × 1¼ in.	per ft. run	0	9
Mahogany handrail: average, 3 in. × 3 in.	" "	6	0
Add if ramped	" "	12	0
Add if wreathed	" "	24	0

FIXING ONLY IRONMONGERY (INCLUDING SCREWS).

6 in. barrel bolts	8½d.	Rim locks	2/-
Sash fasteners	11½d.	Mortice locks	4/6
Casement fasteners	1/5	Patent spring hinges and letting into floor and making good	19/-
Casement stays	1/2		
Cupboard locks	1/5		

FOUNDER AND SMITH.

		s.	d.
Rolled steel joists	per cwt.	16	3
Plain compound girders	"	19	0
Do. stanchions	"	21	9
In roofwork	"	27	6

RAIN-WATER GOODS.

		3"	4"	5"	6"
Half-round plain rebated joints	ft. run	1/6	1/9	2/-	2/6
Ogee Do. Do.	"	1/9	2/-	2/6	3/3
Rain-water pipes with ears	"	1/9	2/7	—	—
Extra for shoes and bends	each	4/4	5/11	—	—
Do. stopped ends	"	1/11	2/4½	3/7	4/-
Do. nozzles for inlets	"	2/2	2/7	3/10	4/3

PLUMBER.

		s.	d.
Milled lead and laying in flashings and gutters	per cwt.	44	0
Do. Do. in flats	"	43	0
Extra labour and solder in coated cesspools	each	6	9
Welf joint	per ft. run	0	6
Soldered seam	" "	1	3
Copper nailing	" "	0	3

		½"	¾"	1"	1½"	2"	4"
Drawn lead waste	per ft. run	1/2	1/9	2/-	3/4	4/-	—
Do. service	"	1/8	2/2	2/7	3/10	—	—
Do. soil	"	—	—	—	—	—	6/9
Bends in lead pipe	each	—	—	—	—	3/3	5/2
Soldered stop ends	"	1/2	1/8	2/1	2/10	3/6	—
Red lead joints	"	11d.	1/-	1/3	1/11	2/4	4/10
Wiped soldered joints	"	2/10	3/6	4/-	4/11	6/6	9/9
Lead traps and cleaning screws	"	—	—	—	14/7	19/6	—
Bib cocks and joints	"	6/4	9/7	15/4	41/-	—	—
Stop cocks and joints	"	15/4	17/2	25/8	64/-	—	—

PLASTERER.

		s.	d.
Render, float and set in lime and hair	per yard sup.	2	6
Do. Do. Sirapite	" "	2	9
Do. Do. Keen's	" "	4	0
Add saw lathing	" "	1	7
Add metal lathing	" "	2	6
(Not including hangers or runners, etc., for suspended ceilings.)			
Portland cement screed	" "	2	2
Do. plain face	" "	3	3
Mouldings in plaster	" "	0	1½
One-and-a-half granolithic pavings	per 1 girth	5	6

GLAZIER.

		s.	d.
21-oz. sheet plain	per foot sup.	0	8½
26-oz. Do.	" "	1	0
Obscured sheet	" "	1	1
¼-in. rolled plate	" "	0	9
¼-in. rough rolled or cast plate	" "	0	10½
¼-in. wired cast plate	" "	1	4

PAINTER.

		s.	d.
Preparing and distempering, 2 coats	per yard sup.	0	9
Knotting and priming	" "	0	7
Plain painting, 1 coat	" "	0	9
Do. 2 coats	" "	1	2
Do. 3 coats	" "	1	9
Do. 4 coats	" "	2	4
Graining	" "	2	3
Varnishing twice	" "	1	9
Sizing	" "	0	5
Flatting	" "	0	7
Enamel	" "	1	1
Wax polishing	per foot sup.	0	6
French polishing	" "	1	2
Preparing for and hanging paper	per piece, 2/- to 4/-		

*These prices apply to *new buildings only.* They cover superintendence by foreman and carry a profit of 10% on the prime cost without establishment charges. A percentage of 1½ should be added for Employers' Liability and National Health and Unemployment Acts and from 1s. 6d. per £100 for Fire Insurance. The whole of the information given on this page is copyright.

NEW COMPANIES

THE particulars quoted below have been compiled by Messrs. Jordan & Sons, Ltd., Company Registration Agents, of 116 and 117, Chancery-lane, W.C.2, from the documents available at the Companies' Registry.

LAWFORD ASPHALTE CO., LTD. (246,905). Registered March 28. Bow Bridge, E.15. Asphalt contractors. Nominal capital, £20,000.

CHARLES WRAY, LTD. (246,889). Registered March 28. To acquire any lands, houses, buildings and other property; and to lay out land for building purposes, etc. Nominal capital, £5,000. C. Wray, "Redbourne," 23, Bricknell-avenue, Hull.

HUGHES BROTHERS BRIGHTER HOMES STORES, LTD. (246,933). Registered March 29. 200, Conway-street, Birkenhead. Paint and wallpaper manufacturer. Nominal capital, £1,000.

HERBERT BOYER, LTD. (246,932). Registered March 29. Brent Side-yard, Wembley. Demolition contractors, builders, etc. Nominal capital, £1,000.

H. C. JONES & Co. (SURREY), LTD. (246,930). Registered March 29. Superla House, Regent-road, Surbiton, Surrey. Builders and decorators. Nominal capital, £10,000.

JOHN J. ALLEN & SONS, LTD. (246,961). Registered March 29. Joiners. At Bostock-street, Preston. Nominal capital, £1,400.

MCKELLAR & WESTERMAN, LTD. (246,940). Registered March 29. 136, Church-road, Hove. Builders, bricklayers, etc. Nominal capital, £500.

LEX ESTATES SYNDICATE, LTD. (247,019). Registered April 1. 89, Aldersgate-street, E.C. To lay out and prepare land for building purposes, etc. Nominal capital, £2,000.

G. W. DAY & Co., LTD. (247,037). Registered April 2. 10, Dacre-street, Broadway, Westminster, S.W.1. Builders and decorators. Nominal capital, £1,000.

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Ashby-de-la-Zouch.—Pavilion at Western-park, for the U.D.C.:—

*E. & H. Smedley, Ashby-de-la-Zouch.

Ashton-under-Lyne.—Stripping a portion of the roof of the Market Hall, and boarding, felting and reslating same. Messrs. Eaton, Sons & Cantrell, architects, Stamford-street:—

*Swallow & Taylor, Cock Brook, Ashton-under-Lyne £1,090

Bedlington.—Roman Catholic junior, mixed and infants' schools for 300 children. Mr. Frank A. Coyle, architect, 11, Saville-road, Newcastle-on-Tyne:—

*G. Towers, Blyth £4,890
Fancy Bricks—*— Foster, Backworth.
Artificial Stone—*J. T. Dove, Ltd.
Heating—*Rowells (1924), Ltd., Newcastle.
Sanitary Fittings—*Adamses, Scotswood-on-Tyne.
Hardwood Floors—*Hollis Bros., Ltd., Hull.
Electric Lighting and Fittings—*Levereux Moodie & Co., Ltd., Newcastle-on-Tyne.

Brampton, Cumberland.—10 houses, for the Public Utility Society. Mr. Graham, architect to the Society, Carlisle:—

*Ridley Bros., Brampton.

Cambridge.—New Council Offices at Castle Hill, for the C.C. Mr. H. H. Dunn, F.R.I.B.A., County Architect, County Hall. Quantities by Mr. L. C. Veale, London:—

C. Miskin & Son, Ltd., St. Albans ...	£52,296
W. Bell & Sons, Cambridge	51,656
E. Bowman & Sons, Stamford	50,660
T. Raban & Sons, Baldock	50,506
Kidman & Sons, Cambridge	49,544
W. Lawrence & Sons, Ltd., London...	48,663
J. Honour & Sons, Ltd., Tring	48,530
Hipperson & Son, London	48,482
Johnson & Bailey, Cambridge	47,637
Rattee & Kett, Ltd., Cambridge	46,991
Gee, Walker & Slater, Ltd., Derby ...	46,701
H. Martin, Ltd., Northampton	46,438
F. J. Bailey & Co., Ltd., Ashwell...	44,526
Coulson & Son, Ltd., Cambridge ...	44,118
‡C. Kerridge, Cambridge	43,362

Cardiff.—Construction of engine shed, etc., for the G.W. Railway. Mr. F. R. E. Davis, Secretary, Paddington Station, London, W.:—

*E. C. Jordan & Son, Newport.

Castleford.—Public conveniences and waiting rooms in Bradley-street, for the U.D.C.:—

*L. J. Gallagher & Sons £1,034 16 2

Corrigydruidion.—Remodelling, extending and improving the police station and court room, for the Denbighshire C.C.:—

*Ashworth Bros., Rhos-on-Sea £1,656

Cockermouth.—16 non-parlour two-bedroom and non-parlour three-bedroom houses on the Moor housing site, fronting on to new Henry-street, and the construction of sewers, for the U.D.C.:—

Two-bedroom type—
T. Armstrong, Ltd., Saw Mills, Cockermouth £298
Three-bedroom type—
T. Armstrong, Ltd., Saw Mills, Cockermouth 328
Two-bedroom type—
Border Engineering Contractors, Ltd., Whitehaven 299
Three-bedroom type—
Border Engineering Contractors, Ltd., Whitehaven 332

Croydon.—Erection of St. Augustine's-avenue substation building, for the C.B.:—

E. J. Saunders	£510
Grace & Marsh, Ltd.	486
Truett & Steel, Ltd.	466
D. Waller	399
G. Poulton & Sons	391
R. Mansell	387
*E. H. Smith	380

Croydon.—Erection of sub-station buildings, for the C.B.:—

Thornton-road—
*T. H. Smith £575
Walpole-road—
*D. Waller 498
Virginia-road—
*Grace & Marsh 496

Culter.—Public convenience, for the Aberdeen District Committee of the C.C. Mr. Henry Milne, A.M.I.C.E., Architect, 7, Bon-Accord-square, Aberdeen:—

Builder—*Wm. Kemp, Aberdeen.
Plasterer and tiler—*Sellar & Co.
Plumber—*J. & G. Monro.
Carpenter—*A. & A. Shearer.

Denbigh.—New school at Pentrevoelas, for the Denbighshire C.C. Mr. W. D. Wiles, County Architect, Acton Hall, Wrexham:—

*Woolley & Sons, Rhos-on-Sea £9,800

Doncaster.—Alterations and additions to the Guildhall, for the West Riding C.C. Mr. P. O. Platts, A.R.I.B.A., County Architect, County Hall, Wakefield:—

*Whittingtons (Doncaster), Ltd., Doncaster £13,000

Doncaster.—New boundary walls and fences at the new infirmary at Thorne-road, for the Governors:—

*H. Arnold & Sons, Ltd.

Formby.—12 houses in New-road, for the U.D.C. Surveyor:—

*Formby Bros. ..... £325 each

Harrogate.—Alterations and additions to the Muckle's Vaults, Leeds-road, for Messrs. Joshua Tetley and Sons, Ltd., The Brewery, Leeds. Messrs. Kitson, Parish, Edgard & Pyeman, architects, Leeds:—

*B. Coates & Son, Ltd.

Kidderminster.—Renovating and restoring tower and spire of church in the cemetery:—

*Elcock & Wood, Smethwick.

Leeds.—Extensions to the garage and workshops in Roseville-road, for the West Yorkshire Road Car Co., Ltd. Mr. G. W. Atkinson, architect, St. John's House, Merrion-street:—

Main Contract—*J. W. Shippen & Sons, Ltd.
Asphalter—*Tunstall's Rock Asphalte Co., Ltd.

Liverpool.—Extensions to Mossley Hill S.O., for H.M.O.W.:—

*J. Williams (Liverpool), Ltd., 70, Collingwood-street, Liverpool.

London.—Cleaning and repainting station buildings, etc., for the G.W.R. Mr. F. R. E. Davis, secretary, Paddington Station, London, W.2:—

Totnes, Lostwithiel, etc.—*Geo. Jones & Son, Liverpool.
Tavistock, Launceston, etc.—*F. C. Walls & Son, Plymouth.
Redruth, St. Blazey, etc.—*S. H. Bell & Co., St. Annes-on-Sea.
Fishguard, Goodwick, Mathry-road, etc.—*Fields, Ltd., Nottingham.
Dorrington, Craven Arms, etc.—*Fields, Ltd., Nottingham.
Bewdley, Stourport, etc.—*Fields, Ltd., Nottingham.

London.—Maternity home at 13, Grove-road, Balham, for the Wandsworth B.C. Messrs. N. J. & J. S. Thomson, F. & A.R.I.B.A., 49, Hill-road, Wimbledon. Quantities by Mr. Arthur Boxall, 7, Queen Anne's-gate, S.W.1:—

S. J. Evans, Carshalton	£38,600
W. J. Marston & Son	36,500
G. Brittain & Sons, Ltd.	34,972
W. F. Goodchild	34,069
J. & R. Thompson (London), Ltd....	33,728
Grace & Marsh, Ltd., Croydon	33,720
H. Hann	33,412
Lole & Co., Ltd.	32,906
Perrys (Ealing), Ltd.	32,330
William Hammond, Ltd.	32,471
Wilson Lovatt & Sons, Ltd., Wolverhampton	31,766
Corolite Construction, Ltd.	31,463
J. & C. Bowyer, Ltd.	31,273
F. Lliey & Sons	31,058
Sabey & Son (Islington), Ltd.	30,983
The Unit Construction Co., Ltd.	30,519
William Moss & Sons, Ltd.	30,500
Hammond & Barr, Ltd.	30,137
Ide & Son, Kingston	30,105
J. Crowdson, Horley	29,980
A. & F. J. Leather, Ltd.	29,864
*F. D. Hilden & Co., Ltd., Brentford (Remainder of London.)	29,332

London.—Shelter in the Council's Thornhill gardens, Richmond-rd., for the Islington B.C.:—

A. Cheetham	£225
J. Johnson	210
Wm. Ball & Sons (Highbury), Ltd....	205
W. Bolt & Son, Ltd.	201
Stevens & Sons	192
S. Shaw	178
*J. C. Mather & Son, 38, Northampton-street	149

(All of London.)

London.—Repainting the external wood and iron work of properties at (*a*) 44-133, Barlby-road; and (*b*) Avondale Park-gardens estate, for the Kensington B.C.:—

(*a*) *F. Brown, Ltd. £261
(*b*) *G. N. Watts, Ltd. 239

CURRENT PRICES FOR BUILDING WORK IN LONDON*

EXCAVATOR.

		s.	d.
Digging and throwing or wheeling and filling carts, and carting away to shoot—6 ft. deep	per yard cube	11	0
Add if in clay	„ „	1	0
Add for every additional depth of 6 ft.	„ „	0	6
Planking and strutting to trenches	per foot super	0	5
Do. to sides of excavation, including shoring	„ „	1	0

CONCRETOR.

Portland cement concrete in foundation 1 to 6	per yard cube	38	0
Add if in underpinning in short lengths	„ „	7	0
Add if in floors 6 in. thick	„ „	3	3
Add if in beams	„ „	3	9
Add if aggregate 1 : 2 : 4	„ „	10	0
Add for hoisting not exceeding 10 ft. beyond the first 10 ft.	„ „	2	6

BRICKLAYER.

		£	s.	d.
Reduced brickwork in lime mortar and Fletton bricks	per rod	32	0	0
Add if in stocks	„	7	10	0
Add if in Staffordshire blues	„	22	0	0
Add if in Portland cement and sand	„	1	10	0

FACINGS.

Extra for facing in English or Flemish bond for every 10s. per 1,000 over the price of the common bricks	per ft. super	0	0	1½

POINTING.

Neat flat struck or weathered joint	„ „	0	0	3

ARCHES.

Extra only to the price of ordinary brickwork :—				
Fair external in half brick rings	„ „	0	0	10
Axed in stocks	„ „	0	1	9
Rubbed and gauged jointed in putty camber or segmental	„ „	0	6	0

SUNDRIES.

Damp course in double course of slates breaking joint and bedded in Portland cement	„ „	0	1	0
Setting ordinary register grates and stoves	each	1	0	0
Setting kitchener, including forming flues, &c., with all necessary fire bricks	„	4	15	0

ASPHALTER.

		s.	d.
Half-inch horizontal damp course	per yard super	4	6
Three-quarter-inch vertical damp course	„ „	9	6
Three-quarter-inch on flats in two thicknesses	„ „	6	3
Angle fillet	per foot run	0	3
Skirting and fillet 6 in. high	„ „	1	2

MASON.

York stone templates fixed	per foot cube	13	0
York stone sills fixed	„ „	22	0
Bath stone and all labour fixed	„ „	10	6
Beer stone and all labour fixed	„ „	15	0
Portland stone fixed	„ „	20	0

SLATER.

Welsh 16 in. × 8 in. 3 in. lap, including nails	per square	72	9
Do. 20 in. × 10 in. Do. Do.	„	80	9
Do. 24 in. × 12 in. Do. Do.	„	90	0

CARPENTER AND JOINER.

Fir framed in plates	per foot cube	5	0	
Do. joists	„ „	5	6	
Do. roofs, floors and partitions	„ „	6	0	
Do. trusses	„ „	8	6	

		¾″	1″	1¼″	2″
Deal rough close boarding	per sq.	35/6	40/-	45/-	72/-

Flat centering for concrete floor, including struts or hangers	„	50	0	
Do. to beams	per ft. sup.	0	11	
Centre for arches	„	1	6	
Gutter boards and bearers	„	1	0	

FLOORING.		¾″	1″	1¼″	1½″
Deal edges shot	per sq.	—	44/6	53/-	60/6
Do. tongued and grooved	„	—	49/-	57/6	65/-
Do. matchings	„	45/-	51/-	—	—
Moulded skirting, including backings and grounds	per ft. sup.	1/6	1/9	2/-	2/6

SASHES AND FRAMES.

		s.	d.
One-and-a-half moulded sashes or casements	per foot super	1	10
Two Do. Do. Do.	„ „	2	1
Add for fitting and fixing	„ „	0	3
Deal-cased frames with 1 in. inner and outer linings, 1½ in. pulley stiles tongued to linings, hard wood sills with 2 in. moulded sashes in squares, double hung, double hung with pulleys, lines and weights : average size	„ „	3	9

DOORS.		1½″	1¾″	2″
Two-panel square framed	per ft. sup.	2/1	2/4	2/6
Four-panel Do.	„	2/5	2/8	2/11
Two-panel moulded both sides	„	2/8	2/11	3/2
Four-panel Do. Do.	„	2/11	3/2	3/5

CARPENTER AND JOINER—continued.

FRAMES.					s.	d.
Deal wrot moulded and rebated	per foot cube				14	0
		1″	1¼″	1½″		
Plain deal jamb linings framed	per ft. sup.	1/7	1/8	1/11		
Deal shelves and bearers	„	1/4	1/6	1/9		
Add if cross-tongued	„	2d.	2d.	2d.		

STAIRCASES.	1″	1¼″	1½″	2″	2½″
Deal treads and risers in and including rough brackets	2/1	2/4	2/9	—	—
Deal strings wrot on both sides and framed	1/8	2/-	2/2	2/8	—

		s.	d.
Housings for steps and risers	each	0	11
Deal balusters, 1 in. × 1¼ in.	per ft. run	0	9
Mahogany handrail : average, 3 in. × 3 in.	„ „	6	0
Add if ramped	„ „	12	0
Add if wreathed	„ „	24	0

FIXING ONLY IRONMONGERY (INCLUDING SCREWS).

6 in. barrel bolts	8½d.	Rim locks	2/-
Sash fasteners	11½d.	Mortice locks	4/6
Casement fasteners	1/5	Patent spring hinges and letting into floor and making good	19/-
Casement stays	1/2		
Cupboard locks	1/5		

FOUNDER AND SMITH.

		s.	d.
Rolled steel joists	per cwt.	16	3
Plain compound girders	„	19	0
Do. stanchions	„	21	9
In roofwork	„	27	6

RAIN-WATER GOODS.

		3″	4″	5″	6″
Half-round plain rebated joints	ft. run	1/6	1/9	2/-	2/6
Ogee Do. Do.	„	1/9	2/-	2/6	3/3
Rain-water pipes with ears	„	1/9	2/7	—	—
Extra for shoes and bends	each	4/4	5/11	—	—
Do. stopped ends	„	1/11	2/4½	3/7	4/-
Do. nozzles for inlets	„	2/2	2/7	3/10	4/3

PLUMBER.

		s.	d.
Milled lead and laying in flashings and gutters	per cwt.	44	0
Do. Do. in flats	„	43	0
Extra labour and solder in coated cesspools	each	6	9
Welf joint	per ft. run	0	6
Soldered seam	„ „	1	3
Copper nailing	„ „	0	3

		½″	¾″	1″	1¼″	2″	4″
Drawn lead waste	per ft. run	1/2	1/9	2/-	3/4	4/-	—
Do. service	„	1/8	2/2	2/7	3/10	—	—
Do. soil	„	—	—	—	—	—	6/9
Bends in lead pipe	each	—	—	—	—	3/3	8/2
Soldered stop ends	„	1/2	1/8	2/1	2/10	3/6	—
Red lead joints	„	11d.	1/-	1/3	1/11	2/4	4/10
Wiped soldered joints	„	2/10	3/6	4/-	4/11	6/6	9/9
Lead traps and cleaning screws	„	—	—	—	14/7	19/6	—
Bib cocks and joints	„	6/4	9/7	15/4	41/-	—	—
Stop cocks and joints	„	15/4	17/2	25/8	64/-	—	—

PLASTERER.

			s.	d.
Render, float and set in lime and hair	per yard sup.		2	6
Do. Do. Sirapite	„ „		2	9
Do. Do. Keen's	„ „		4	0
Add saw lathing	„ „		1	7
Add metal lathing	„ „		2	6
(Not including hangers or runners, etc., for suspended ceilings.)				
Portland cement screed	„ „		2	2
Do. plain face	„ „		3	3
Mouldings in plaster	per 1 girth		0	1½
One-and-a-half granolithic pavings	per yard sup.		5	6

GLAZIER.

			s.	d.
21-oz. sheet plain	per foot sup.		0	8½
26-oz. Do.	„ „		1	0
Obscured sheet	„ „		1	1
⅛-in. rolled plate	„ „		0	9
¼-in. rough rolled or cast plate	„ „		0	10½
¼-in. wired cast plate	„ „		1	4

PAINTER.

			s.	d.
Preparing and distempering, 2 coats	per yard sup.		0	9
Knotting and priming	„ „		0	7
Plain painting, 1 coat	„ „		0	9
Do. 2 coats	„ „		1	2
Do. 3 coats	„ „		1	9
Do. 4 coats	„ „		2	4
Graining	„ „		2	3
Varnishing twice	„ „		1	9
Sizing	„ „		0	3
Flatting	„ „		0	7
Enamel	„ „		1	1
Wax polishing	per foot sup.		0	6
French polishing	„ „		1	3
Preparing for and hanging paper	per piece, 2/- to 4/-			

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NEW COMPANIES

THE particulars quoted below have been compiled by Messrs. Jordan & Sons, Ltd., Company Registration Agents, of 116 and 117, Chancery-lane, W.C.2, from the documents available at the Companies' Registry.

LAWFORD ASPHALTE CO., LTD. (246,905). Registered March 28. Bow Bridge, E.15. Asphalt contractors. Nominal capital, £20,000.

CHARLES WRAY, LTD. (246,889). Registered March 28. To acquire any lands, houses, buildings and other property; and to lay out land for building purposes, etc. Nominal capital, £5,000. C. Wray, "Redbourne," 23, Bricknell-avenue, Hull.

HUGHES BROTHERS BRIGHTER HOMES STORES, LTD. (246,933). Registered March 29. 200, Conway-street, Birkenhead. Paint and wallpaper manufacturer. Nominal capital, £1,000.

HERBERT BOYER, LTD. (246,932). Registered March 29. Brent Side-yard, Wembley. Demolition contractors, builders, etc. Nominal capital, £1,000.

H. C. JONES & CO. (SURREY), LTD. (246,930). Registered March 29. Superla House, Regent-road, Surbiton, Surrey. Builders and decorators. Nominal capital, £10,000.

JOHN J. ALLEN & SONS, LTD. (246,961). Registered March 29. Joiners. At Bostock-street, Preston. Nominal capital, £1,400.

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Ashton-under-Lyne.—Stripping a portion of the roof of the Market Hall, and boarding, felting and reslating same. Messrs. Eaton, Sons & Cantrell, architects, Stamford-street:—
*Swallow & Taylor, Cock Brook, Ashton-under-Lyne £1,090

Bedlington.—Roman Catholic junior, mixed and infants' schools for 300 children. Mr. Frank A. Coyle, architect, 11, Saville-road, Newcastle-on-Tyne:—
*G. Towers, Blyth £4,890
Fancy Bricks—*— Foster, Backworth.
Artificial Stone—*J. T. Dove, Ltd.
Heating—*Rowells (1924), Ltd., Newcastle.
Sanitary Fittings—*Adamses, Scotswood-on-Tyne.
Hardwood Floors—*Hollis Bros., Ltd., Hull.
Electric Lighting and Fittings—*Devereux Moodie & Co., Ltd., Newcastle-on-Tyne.

Brampton, Cumberland.—10 houses, for the Public Utility Society. Mr. Graham, architect to the Society, Carlisle:—
*Ridley Bros., Brampton.

Cambridge.—New Council Offices at Castle Hill, for the C.C. Mr. H. H. Dunn, F.R.I.B.A., County Architect, County Hall. Quantities by Mr. L. C. Veale, London:—

C. Miskin & Son, Ltd., St. Albans	£52,296
W. Bell & Sons, Cambridge	51,656
E. Bowman & Sons, Stamford	50,660
T. Raban & Sons, Baldock	50,506
Kidman & Sons, Cambridge	49,544
W. Lawrence & Sons, Ltd., London	48,663
J. Honour & Sons, Ltd., Tring	48,530
Hipperson & Son, London	48,482
Johnson & Bailey, Cambridge	47,637
Rattee & Kett, Ltd., Cambridge	46,991
Geo. Walker & Slater, Ltd., Derby	46,701
H. Martin, Ltd., Northampton	46,438
F. J. Bailey & Co., Ltd., Ashwell	44,526
Coulson & Son, Ltd., Cambridge	44,118
‡C. Kerridge, Cambridge	43,362

Cardiff.—Construction of engine shed, etc., for the G.W. Railway. Mr. F. R. E. Davis, Secretary, Paddington Station, London, W.:—
*E. C. Jordan & Son, Newport.

Castleford.—Public conveniences and waiting rooms in Bradley-street, for the U.D.C.:—
*L. J. Gallagher & Sons £1,034 16 2

Corrigydruidion.—Remodelling, extending and improving the police station and court room, for the Denbighshire C.C.:—
*Ashworth Bros., Rhos-on-Sea £1,666

Cockermouth.—16 non-parlour two-bedroom and non-parlour three-bedroom houses on the Moor housing site, fronting on to new Henry-street, and the construction of sewers, for the U.D.C.:—
Two-bedroom type—
T. Armstrong, Ltd., Saw Mills, Cockermouth £298
Three-bedroom type—
T. Armstrong, Ltd., Saw Mills, Cockermouth 328
Two-bedroom type—
Border Engineering Contractors, Ltd., Whitehaven 299
Three-bedroom type—
Border Engineering Contractors, Ltd., Whitehaven 332

Croydon.—Erection of St. Augustine's-avenue substation building, for the C.B.:—

E. J. Saunders	£510
Grace & Marsh, Ltd.	486
Truett & Steel, Ltd.	466
D. Waller	399
G. Poulton & Sons	391
R. Mansell	387
*E. H. Smith	380

Croydon.—Erection of sub-station buildings, for the C.B.:—
Thornton-road—
*T. H. Smith £575
Walpole-road—
*D. Waller 498
Virginia-road—
*Grace & Marsh 495

Culter.—Public convenience, for the Aberdeen District Committee of the C.C. Mr. Henry Milne, A.M.I.C.E., Architect, 7, Bon-Accord-square, Aberdeen:—
Builder—*Wm. Kemp, Aberdeen.
Plasterer and tiler—*Sellar & Co.
Plumber—*J. & G. Monro.
Carpenter—*A. & A. Shearer.

Denbigh.—New school at Pentrevoelas, for the Denbighshire C.C. Mr. W. D. Wiles, County Architect, Acton Hall, Wrexham:—
*Woolfer & Sons, Rhos-on-Sea £9,800

Doncaster.—Alterations and additions to the Guildhall, for the West Riding C.C. Mr. P. O. Platts, A.R.I.B.A., County Architect, County Hall, Wakefield:—
*Whittingtons (Doncaster), Ltd., Doncaster £13,000

Doncaster.—New boundary walls and fences at the new infirmary at Thorne-road, for the Governors:—
*H. Arnold & Sons, Ltd.

Formby.—12 houses in New-road, for the U.D.C. Surveyor:—
*Formby Bros. ..... £325 each

Harrogate.—Alterations and additions to the Mackie's Vaults, Leeds-road, for Messrs. Joshua Tetley and Sons, Ltd., The Brewery, Leeds. Messrs. Kitson, Parish, Ledgard & Pyeman, architects, Leeds:—
*B. Coates & Son, Ltd.

Kidderminster.—Renovating and restoring tower and spire of church in the cemetery:—
*Elcock & Wood, Smethwick.

Leeds.—Extensions to the garage and workshops in Roseville-road, for the West Yorkshire Road Car Co., Ltd. Mr. G. W. Atkinson, architect, St. John's House, Merrion-street:—
Main Contract—*J. W. Shippen & Sons, Ltd.
Asphalter—*Tunstall's Rock Asphalte Co., Ltd.

Liverpool.—Extensions to Mossley Hill S.O., for H.M.O.W.:—
*J. Williams (Liverpool), Ltd., 70, Collingwood-street, Liverpool.

London.—Cleaning and repainting station buildings, etc., for the G.W.R. Mr. F. R. E. Davis, secretary, Paddington Station, London, W.2:—
Totnes, Lostwithiel, etc.—*Geo. Jones & Son, Liverpool.
Tavistock, Launceston, etc.—*F. C. Walls & Son, Plymouth.
Redruth, St. Blazey, etc.—*S. H. Bell & Co., St. Annes-on-Sea.
Fishguard, Goodwick, Mathry-road, etc.—*Fields, Ltd., Nottingham.
Derrington, Craven Arms, etc.—*Fields, Ltd., Nottingham.
Bewdley, Stourport, etc.—*Fields, Ltd., Nottingham.

London.—Maternity home at 13, Grove-road, Balham, for the Wandsworth B.C. Messrs. N. J. & J. S. Thomson, F. & A.R.I.B.A., 49, Hill-road, Wimbledon. Quantities by Mr. Arthur Boxall, 7, Queen Anne's-gate, S.W.1:—

S. J. Evans, Carshalton	£38,600
W. J. Marston & Son	36,500
G. Brittain & Sons, Ltd.	34,972
W. F. Goodchild	34,069
J. & R. Thompson (London), Ltd.	33,728
Grace & Marsh, Ltd., Croydon	33,720
H. Hann	33,412
Lole & Co., Ltd.	32,905
Perrys (Ealing), Ltd.	32,330
William Hammond, Ltd.	32,471
Wilson Lovatt & Sons, Ltd., Wolverhampton	31,765
Corolite Construction, Ltd.	31,453
J. & C. Bowyer, Ltd.	31,273
F. Lliey & Sons	31,052
Sabey & Son (Islington), Ltd.	30,983
The Unit Construction Co., Ltd.	30,519
William Moss & Sons, Ltd.	30,500
Hammond & Barr, Ltd.	30,137
Ide & Son, Kingston	30,105
J. Crewdson, Horley	29,980
A. & F. J. Leather, Ltd.	29,864
*F. D. Hidden & Co., Ltd., Brentford (Remainder of London.)	29,332

London.—Shelter in the Council's Thornhill gardens, Richmond-rd., for the Islington B.C.:—

A. Cheetham	£225
J. Johnson	210
Wm. Ball & Sons (Highbury), Ltd.	205
W. Bolt & Son, Ltd.	201
Stevens & Sons	192
S. Shaw	178
*J. C. Mather & Son, 38, Northampton-street (All of London.)	149

London.—Repainting the external wood and iron work of properties at (*a*) 44-133, Bariby-road; and (*b*) Avondale Park-gardens estate, for the Kensington B.C.:—
(*a*) *F. Brown, Ltd. £261
(*b*) *G. N. Watts, Ltd. 239

†London.—The following contract has been placed by the War Office for week ending April 26, 1930 :—

North London District—artificers' work—*F. E. Hipperson & Son, London, E.C.*

Longtown.—Additions and alterations to the Council school, for the Cumberland E.C. Mr. J. Forster, F.R.I.B.A., County Architect, The Courts, Carlisle :—

*T. Armstrong, Ltd., Saw Mills, Cockermouth £30,975

Loughborough.—Eight almshouses in North-road, for the Trustees of Frosts' Charity. Messrs. G. H. & A. M. Barrowcliffe, architects, Town Hall-chambers :—

*H. Hammond & Sons, Loughborough.

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Malden.—Houses, for the R.D.C. Mr. Wm. Almond, surveyor. Quantities by the surveyor :—

6 houses, Tolleshury—
†T. H. E. Belcher, Kelvedon ... £2,199 4,6

3 bungalows, Latchingdon—
†T. H. E. Belcher, Kelvedon ...2,051 14 9

4 houses, Woodham Walter—
†T. H. E. Belcher, Kelvedon ... 1,141 15 8

6 bungalows, Purleigh—
†H. W. Hempstead, Latchingdon 1,607 3 2

Malvern.—Branch bank on the Woods Royal Library site in Belle Vue-terrace, for the Barclays Bank. Mr. Guy Pemberton, F.R.I.B.A., architect, Belle Vue Mansions :—

*Houghton Brothers, Worcester.

Newark.—66 houses on the Bowbridge-road site, for the T.C. Mr. J. H. Clarke, Borough Surveyor :—

*Wm. Smith (Newark), Ltd., Millgate, Newark.

Newbury.—New reservoir at Cold Ash, for the T.C. :—

*Collier & Catley, Ltd., Reading ..... £3,231.

Newton-in-Makerfield.—For (a) 34 parlour-type; (b) 84 non-parlour 3 bedroom; and (c) 60 non-parlour 2 bedroom, on Park-road housing estate, for the U.D.C. Mr. J. Elston, A.R.I.B.A., architect, Market-street, Earlestown :—

(a) *Wimshaw & Thomas, Stretford, near Manchester.
(b) *J. Dolan & Son, Warrington.
(c) *W. Peak, Dutton-street, Warrington.

Normanton.—Reconstruction at the Normanton Common Girls' school, for the E.C. :—

*J. Bramham & Son.

Northampton.—Stand at the football ground, for the Town Football Club :—

*A. C. Bearsmore & Co., Northampton.

Oswestry.—Parochial hall at Cheswardine, for Trustees :—

*T. Healey, Market Drayton £1,415

Redcar.—100 houses at Dormanstown :—

*P. Duffey, Norton-on-Tees.

Rugby. — Installation of heating plant and domestic hot water supply at the Hospital of St. Cross :—

*Ashwell & Nesbitt.

Sheffield.—New club premises for the Crookes Working Men's Club and Institute, Ltd., Milehouse-road, Crookes :—

*Mason & Quince.
Plumbers—*Simpson & Co.
Plastering and slating—*Chadwick & Co.
Steelwork—*Ross Heeley.
(All of Sheffield.)

Wallsend.—Chapels, etc., at the new Holy Cross cemetery, for the T.C. Mr. J. Blench, Borough Surveyor :—

*B. Peel, Ltd., North Shields £6,000

Westcliff-on-Sea.—For erection of the proposed new Westcliff High School for Girls, to be erected in Eastwood-lane, for Southend E.C. :—

*F. Hutton & Sons, Colchester £46,278

Wolverhampton.—Reconstruction of goods station at Herbert-street, for G.W.R. Engineer, Paddington Station, London, W.2 :—

*M. A. Boswell, Wolverhampton.

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